Design Options and Data Needs for the Ambulatory Payment Innovation in the Public Health Care Sector of Peru

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- *better informed and more participatory policy processes in health sector reform;*
- *more equitable and sustainable health financing systems;*
- *improved incentives within health systems to encourage agents to use and deliver efficient and quality health services; and*
- *enhanced organization and management of health care systems and institutions to support specific health sector reforms.*

PHR*plus advances knowledge and methodologies to develop, implement, and monitor health reforms and their impact, and promotes the exchange of information on critical health reform issues.*

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Abstract

This report is the first technical deliverable under the Ambulatory Payment Innovation, a pilot project that seeks to identify and promote innovative strategies and mechanisms of ambulatory financing in the public health care sector of Peru. The report contains methodological proposals for provider financing, Health Care Network design, and information systems.

The proposed methods of provider financing present an innovative combination of prospectively capitated budgets, service charges for select procedures, patient co-payments, and performance-based distributions according to provider-specific values of a Standards-of-Care Index. The report ponders over the definition of Health Care Networks as an organizational shell in which ambulatory financing reforms are expected to occur in Peru. The study team argues that the existing networks ought to undergo subdivision into more compact entities for the contractual, managerial, and budgeting purposes. The report offers five configurations of the prospectively budgeted systems within the currently defined networks. The proposed methods of financing call for an increased use of information by regulators, purchasers and providers of care. The authors of the report envision the emergence of a health and management information system that will integrate the proposed types of data, most of which can already be found in the institutional domain of the Integrated Social Insurance of Peru.

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Acronyms

AAFP	American Association of Family Practitioners
API	Ambulatory Payment Innovation (in Peru)
BBP	Basic Benefit Package
CFPC	College of Family Physicians of Canada
CLAS	*Consejo Local de Administración de Salud* (Peru) (Local Health Administration Committee)
CPT	Current Procedural Terminology (US)
CS.I	*Centros de Salud, Tipo I* (Peru) (Health Centers, Type I)
CS.II	*Centros de Salud, Tipo II* (Peru) (Health Centers, Type II)
CSR	*Centros de Salud de Referencia* (Peru) (Referral Health Centers)
DISA	*Dirección [Regional] de Salud* (Peru) (Regional Health Administration)
EDB	Enrollment Database
EPI	Expanded Program on Immunization
GP	General Practice
HCN	Health Care Network (Peru)
HPE	Hospital Payment Experiment (in Peru)
ICD-10	International Classification of Diseases, 10th Revision
ICD-9-CM	International Classification of Diseases, 9th Revision, Clinical Modification (US)
ICPC-2	International Classification of Primary Care, 2nd Revision
HMIS	Health and Management Information System
MINSA	*Ministerio de Salud* (Ministry of Health)
PBS	Prospectively Budgeted System
PHC	Primary Health Care
PIN	Personal Identification Number
PMPM	Per month per member
PS.I	*Puestos de Salud, Tipo I* (Peru) (Health Posts, Type I)
PS.II	*Puestos de Salud, Tipo II* (Peru) (Health Posts, Type II)
PSNB	*El Proyecto de Salud y Nutrición Básica* (Peru) (Basic Health and Nutrition Project)
SCI	Standards-of-Care Index

SEG	*El Seguro Escolar Gratuito* (Peru) (Free School Insurance)
SICI	*El Sistema de Costos e Ingresos* (Peru) (System of Costs and Revenue)
SIS	*El Seguro Integral de Salud* (Peru) (Integrated Health Insurance)
SMI	*El Seguro Materno Infantil* (Peru) (Mother and Child Insurance)
SNOMED	Systematized Nomenclature of Human and Veterinary Medicine (US)
STD	Sexually Transmitted Disease
USAID	United States Agency for International Development
USIS	*La Unidad del Seguro Integral de Salud* (Peru) (Integrated Health Insurance Administration)
WHO	World Health Organization
WONCA	World Organization of Family Doctors

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Executive Summary

This report presents a design for organization and payment of ambulatory care. The Ambulatory Payment Innovation (API) is a pilot design initiative that will provide the methodological base for a pilot demonstration of new strategies and tools of ambulatory care financing in the public health care sector of Peru. API follows the Hospital Payment Experiment (HPE) that the Partnerships for Health Reform and Project 2000 conducted in 1998-2000. HPE resulted in the validation of the toolkit for a system of hospital global budgeting based on predetermined case mix rates and caseload. The API design complements the global budgeting approach for hospital reimbursement and provides incentives to support an effective and efficient episode of care that may include both hospital and ambulatory services.

The technical design under API maintains focus on 'Health Care Networks' (HCNs) rather than stand-alone provider institutions. HCNs will be at the forefront of community health care and adequately placed to manage the episode of care and assume key responsibilities for the integrated provision of services to the target populations of Peru.

The list of expected beneficiaries from API includes the Integrated Health Insurance program, Local Health Administration Committees, (Sub)Regional Health Directorates, payroll-based insurance system, as well as medical facilities, communities, and patients. The intended initiative provides methodological contributions to important reform processes in the national health care sector, such as the expansion of health coverage to the poor, devolution of health administration to regional and local levels, competitive contracting of services to the public providers, structural shift towards primary health care, and integration of services among levels of care. These processes work toward a rationalized quality health care system that delivers needed care to those who require it at the most efficient location, either hospital or ambulatory care clinic.

This report contains methodological solutions for the API design, including new strategies and mechanisms of ambulatory financing; configuration of HCNs; and review of information requirements and resources.

The proposed methods of ambulatory financing (Chapter 2) may be best characterized as an innovative combination of prospectively capitated budgets, service charges for select procedures, patient co-payments, and year-end distributions, based on provider-specific values of a Standards-of-Care Index. The API design team deduced the need for a balanced mix of provider payment methods from the inability of any one method to match the motivational and operational diversity of modern ambulatory care. Also, a combination of methods that provides clear incentives to deliver quality efficient care and compensates for the weaknesses of any single method.

API elaborated the following definition of HCNs (Chapter 3) as an organizational shell in which ambulatory financing reforms are expected to occur in Peru:

The HCN is an arrangement that commits health care providers to coordinating their clinical, management, and financial resources in order to serve their shared member population in an equitable, effective, and efficient way. The HCN provides a broad range of care by using its own

clinical base and referring patients to external providers when deemed clinically appropriate. A variable combination of prospective, charge-based, and performance-related methods of financing defines the HCN revenue and budget. The financial results of HCN participating providers depend on their contributions to the attainment of HCN performance targets that may include both quality and efficiency incentives as well as the network's overall success. The HCN manages its participating providers by means of clinical guidelines, utilization and referral standards, internal reimbursement rates, and other methods that ensure quality while controlling costs of services. The HCN is a self-governed entity with a variable degree of association among its participants, i.e., from a minimal coordination to integrated ownership. The HCN is accountable to the community and is bound by a purchaser/provider contract, membership agreement with its enrollees, and internal bylaws. Participating providers determine the geographic parameters, capacity, and organizational structure of their network within the established regulatory boundaries and in ways that are beneficial for population's equitable access to the publicly guaranteed package of health services. The government designates a public regulatory and/or purchasing authority to monitor the HCN for compliance with the basic health policy principles and quality standards, upon which the HCN is chartered to operate.

The API design team argues that the existing HCNs would undergo subdivision into more compact entities for the contractual, managerial, and financing purposes. The report offers five configurations of the prospectively budgeted systems (PBS) within the currently defined HCNs. The proposed organizational structures build on the concepts of network segments and micro-networks, introduced by the Peruvian health system analysts over the past several years. API elaborates on these concepts when configuring PBS. The proposed PBS organizational structures cover the primary and secondary care. Most PBS, thus, are multi-specialty practices.

The proposed combination of ambulatory financing methods would work best, if projected on a PBS.

Given that HCNs will continue to exist and would perform certain functions for clusters of participating PBSs, the report outlines and explains five areas of the HCN system strengthening work (Section 3.3). It then briefly evaluates each area for its current status in Peru and identifies the components that are yet to be developed.

The proposed methods of ambulatory financing call for an increased use of health and management information by Integrated Health Insurance, Regional Health Administrations, HCNs, and participating providers. Patient, clinical, resource, service cost, and utilization data will inform the financing, management, and evaluation of patient care, as well as provide information support for service tracking, billing, and payments. API envisions the emergence of a health and management information system in Peru that will integrate the proposed types of data, most of which may be already found in the institutional domains of MINSA and Integrated Health Insurance.

Introduction

This report is the first technical deliverable under the Ambulatory Payment Innovation (API), a pilot design initiative that, if successful, will provide the methodological base for a pilot demonstration of new strategies and tools of ambulatory care reimbursement in the public health care sector of Peru. API is a collaborative effort of the U.S. Agency for International Development (USAID)-sponsored Partners for Health Reform*plus* and Project 2000, the latter co-sponsored by USAID and the Ministry of Health of Peru (MINSA, by its Peruvian acronym, for *Ministerio de Salud*). This endeavor succeeds to the Hospital Payment Experiment (HPE) that the Partnerships for Health Reform and Project 2000 conducted in 1998-2000. HPE resulted in the validation of the toolkit for a system of hospital global budgeting based on predetermined case mix rates and caseload. API, thus, attempts to extend the design of provider financing from inpatient to outpatient care.

The purpose of this report is to propose provider payment mechanisms for the publicly funded ambulatory services.

In the multi-institutional structure of the Peruvian health care system the governments, employers, and households account for comparable shares of the national health financing. So do the government and payroll-based health insurance in the production of care: both MINSA and the payroll-based insurance system (*EsSalud*) operate their own provider networks on the national scale. At the same time, the MINSA-based programs of targeted health financing and care provision stand out as the nearly unique sources of access to basic medical services for the poor women, children, and, prospectively, the entire population without access to employer-based health insurance. The evolving Integrated Health Insurance program (SIS – *Seguro Integral de Salud*) represents the locus of public health financing that pursues equitable access to quality essential services as its salient goal.

API is poised to contribute to the SIS system and capacity building, recognizing that SIS will spearhead the government's quest for equitable and sustainable health care in Peru. By supporting SIS, the initiative will strengthen prenatal, childbirth, and postpartum services, care of newborns and infants, as well as pediatric care for the school-age children. These types of essential services promise high health gains nationwide because of the following two factors: (1) high effectiveness of the maternity and children's care in terms of its strongly positive impact on population's health, and (2) a large size of SIS target populations with limited and, therefore, a large unrealized potential of health improvements that the SIS program can reap at a moderate cost.

API will have a system strengthening effect on the decentralized procurement and management of health care in Peru. An estimated 4 million Peruvians[1] receive primary care in a largely decentralized environment, i.e., from providers that are overseen by the Local Health Administration Committees (*CLAS – Comités Locales de Administración de Salud*). CLAS manage local primary health care (PHC) on behalf of the government and members of the community. The information and rate-setting tools that will result from API will directly contribute to the control and, prospectively, purchasing functions of CLAS, thus, helping the CLAS foster its institutional identity as an informed

[1] Bermejo, Rogelio. Descentralización en salud. *Revista de la Academia Peruana de Salud*. 5/2000: 30.

advocate of community interests in the provision of basic care. Where the devolution of health care management and purchasing has not reached the CLAS level, the (Sub)Regional Health Directorates (*DISAs – Direcciones Regionales de Salud*) will benefit from the API initiative in contracting services from the health care providers and provider networks.

To further expand the list of the API institutional beneficiaries, *EsSalud* would use the newly designed tools for the purchasing and assessment of care in its provider domain and, as currently contemplated in eight regions of Peru, by agreements with the MINSA health care networks.

The API design and technical agenda presented in this report covers three main subject areas, i.e.:

- New strategies and mechanisms of financing;
- Reorganization of ambulatory care as the context for piloting new methods of financing;
- Strengthening information resources.

The technical design under API maintains focus on 'Health Care Networks' (HCNs) rather than stand-alone provider institutions. HCNs are at the forefront of the community health care and adequately placed to assume key responsibilities for the integrated provision of services to the SIS target populations. An API priority and the point of convergence between the API and the Hospital Payment Experiment agendas, is the allocation of funds to and within the HCN, i.e., among the levels of care and participating providers, in ways that would strengthen primary health care, liberalize consumer choice, and encourage vertical integration of services.

1. The Object of Ambulatory Financing: Defining Primary Health Care

Ambulatory care covers a diverse range of public health and personal health services. In broadly defined terms, it comprises primary health care provided by general practitioners, and secondary care provided by specialists in the outpatient settings, i.e., specialty consultations, specialized diagnostics, outpatient surgeries, rehabilitation, and ambulance calls.

Health system analysts and policy reformers treat primary and secondary care differently. Primary health care is the most favored component of structural reforms in the health sector. Its growing share in the utilization of services and health care resources are tantamount to the system-wide progress towards more accessible, effective, and efficient care. Specialized ambulatory services represent an important opportunity to substitute more cost-effective ambulatory care for hospital care. Their growth at the expense of inpatient care is considered a progressive trend. At the same time, the preponderance of specialists over general practitioners may be indicative of the weakness of PHC. According to a popular reform strategy, the specialty care component ought to refocus on complex diagnostics and somewhat shrink as general practitioners increase their clinical competences and scope of responsibilities, and take over a routine part of the specialists' workload.

Ambulatory payment reforms seek to strengthen primary health care in Peru by empowering the PHC providers with financial incentives for learning new public health strategies and clinical approaches, fostering practice management skills, increasing workloads, and stepping up their involvement in the care management and coordination system-wide. The thrust of the API design is to strengthen the clinical and decision-making powers of general practitioners and encourage them to do more and better for a fairer reward.

This chapter focuses on the content of PHC as the main beneficiary of the application of new financing tools conceived under API. The definition of secondary ambulatory care will derive from the PHC definition, as the 'residual' pool of outpatient services, i.e., the differential between the total outpatient care and PHC.

The definition of PHC in Peru is likely to expand over the course of reforms to include a broader scope of interventions. It, thus, will converge with internationally accepted views on modern PHC. This section provides a summary of standard-setting international definitions of PHC as an important frame of reference for the subsequently proposed methods of ambulatory financing.

The studied PHC definitions from the World Health Organization (WHO), the World Organization of Family Doctors (WONCA), American Association of Family Practitioners (AAFP), and the College of Family Physicians of Canada (CFPC), concur on the following key features of PHC:

1. Care is patient-centered. As an individual, family, and community member, the patient is both the beneficiary of, and the resource for, effective health maintenance and care.

2. PHC derives from micro-epidemiological perspective, i.e., from local health risks and needs as much as, if not more than, from nationwide public health priorities.

3. PHC integrates individual and community care.

4. PHC provides access to competent first-contact care, i.e., addresses diseases, health and health-related concerns that are neither pre-selected nor differentiated.

5. PHC provides continuing care over time and across levels of care by building standing relationships with patients and their families, and referring them to, and coordinating care with, appropriate providers.

6. PHC is focused on essential public health and clinical services. The clinical content of PHC is diverse and encompasses promotive, preventive, curative and rehabilitative services. It includes the following broadly defined interventions and activities:

    a. Education on prevention and control of health problems, including counseling on nutritional and dietary issues;

    b. Maternal and child health care, including family planning;

    c. Immunization against major infectious diseases, i.e., Expanded Program on Immunization, newer and new antigens that are included in the National Immunization Schedule;

    d. Prevention and control of locally endemic diseases;

    e. Appropriate diagnostic and treatment of common conditions, including chronic diseases, acute disorders, and injuries;

    f. Provision of essential drugs.

7. PHC is planned for and delivered to a defined patient population. Primary care practitioners enroll or otherwise register individuals and families for a predetermined period of time.

8. PHC is pro-actively and flexibly managed care. In some cases practitioners would initiate a contact; in others, they would amend the agenda of a patient visit to achieve a broader range of goals. Alternatively, they would advise patients to avoid or postpone a contact. Practitioners conduct certain PHC activities without seeking contact with patients.

Some of the features are peculiar to specific definitions of PHC. In particular,

The WHO/Alma-Ata definition reflects public health agendas of the developing world and calls for PHC interventions that would address health risks associated with low standards of public hygiene, malnutrition, and poverty. Specifically, the WHO/Alma-Ata definition postulates as follows:

9. Equity and universality of access to PHC. This feature is important for countries where equitable access may not be taken for granted. Hence, WHO requires establishing the scope of PHC at affordable and sustainable levels, rather than a comprehensive level, implied by modern practice of medicine.

10. The cross-cutting origins of major health risks require the extension of PHC beyond the borders of the health care sector by involving 'all related sectors and aspects of national and community development' and … 'demanding the coordinated efforts of all those factors'.

11. Concurrent with the tenth feature, WHO extends the list of PHC intervention areas to safe water and basic sanitation, household, occupational, and environmental risk factors.

The PHC definitions from AAFP and CFPC reflect the reality of the health care sectors of industrialized nations, particularly, an emphasis on cost containment, and a powerful clinical and care management potential of PHC practitioners. Hence the following features:

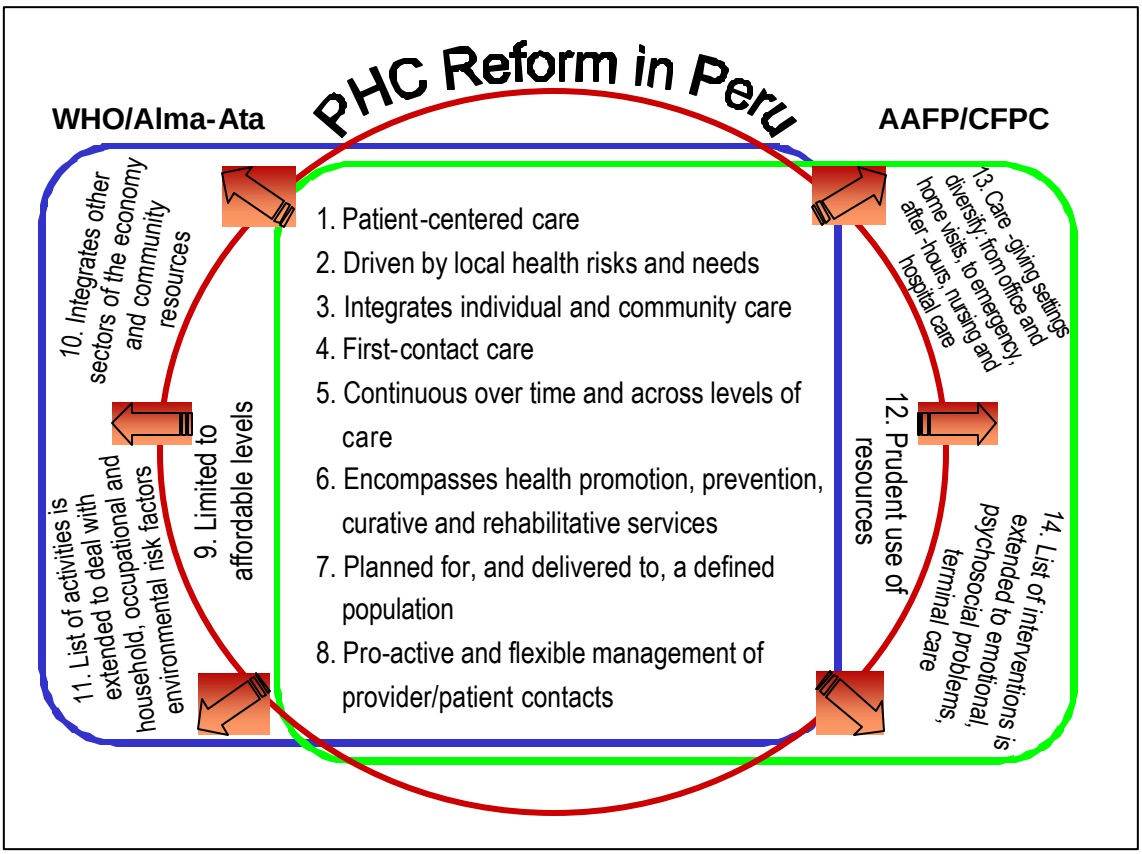
12. Prudent use of resources ('wise stewardship of scarce resources') by means of a 'judicious' use of referrals to specialists and community resources and effective prescribing.

13. Continuity of PHC through diversity of care-giving settings, including emergency, inpatient, long-term, home, and day care.

14. Comprehensiveness of PHC by means of covering emotional problems, complex biopsychosocial problems, and palliative care to people with terminal diseases.

Figure 1 proposes the reformed scope of PHC in Peru as a compilation of common and peculiar features that were extracted from international definitions. The numbering of the PHC features in Figure 1 repeats the numbering in the previously displayed list. The following bullets summarize the content of Figure 1:

Figure 1. The Scope of PHC in the Context of Health Care Reforms in Peru



- The health care reforms in Peru seek to introduce all the features that are uniformly recognized as key to modern PHC (items 1-8).

- The reform will also adhere to the principle of affordability and sustainability of PHC financing (item 9). The present and projected scarcity of resources will confine the scope of PHC to fewer clinical conditions, public health interventions, care-giving settings, as well as to lower levels of financing. It is important, however, to avoid a deliberate or inadvertent discrimination of the people in their access to PHC. The basic benefit package (BBP) by type of service is a legitimate phenomenon in the organization of PHC. Restricted eligibility for BBP is not.

- Prudent use of resources by PHC practitioners (item 12) will attain high importance because of constrained funding and increased exposure of PHC providers to financial risks under the newly proposed methods of PHC financing.

- As PHC reforms advance to their medium- and long-term goals, general practitioners would strengthen their leadership in inter-sectoral and community aspects of public health (item 10), particularly, in promoting the national and local agendas of basic sanitation, programs to reduce tobacco and alcohol consumption, as well as household, workplace, and environmental health risks (item 11).

- In line with their growing clinical competencies, professional recognition by other health care providers and the general public, general practitioners will expand PHC to a broader variety of conditions, i.e., emotional, psychosocial, and terminal ones (item 14).

- General practices (GPs) will provide and manage care for their patients in a larger number of care-giving settings, i.e., by diversifying from office-based practice and house calls into emergency, after-hours, nursing, and inpatient care (item 13). The above-proposed sequence of diversification is based on the 'frequency pyramid' of PHC practice environments in the WONCA's 48 member-countries.[2]

The expansion of PHC will result in the introduction of all services and activities that MINSA contemplates in the framework of the reformed PHC. Most of these services will be enabled at the near-term stage of PHC reforms (see central section of Figure 1); others, such as emergency care and psychosocial support, may be deferred until medium and long term stages.

Further specification of PHC requires the disclosure of item 6 from the above-discussed list. This item covers clinical interventions in PHC and would account for the largest share of PHC practice workload, costs, and funding. The reformed clinical content of PHC in Peru will cover the core of essential services and be extended to additional health problem areas.

The internationally recommended package of essential health services, i.e., those that secure substantial health gains at minimized costs[3], comprises five groups of clinical interventions. Most

[2] According to the 1993 WONCA membership survey, nearly 100 percent of family and general practitioners engage in office practice, 90 percent make house calls and provide emergency care, approximately 58 percent are on call for their patients around the clock, 45 percent are involved in institutionalized nursing care, and approximately 25 percent in hospital care. *Making Medical Practice and Education More Relevant to People's Needs: The Contribution of the Family Doctor*. WHO/WONCA, Geneva, Hong Kong, 1996: 38.
[3] *Invertir en Salud. Informe sobre el Desarrollo Mundial.* Banco Mundial, Washington, DC, 1993: 115.

services in each group pertain to PHC and make part of the traditional or reformed scopes of PHC, specifically:

- Prenatal and childbirth care;
- Family planning;
- Care of common serious childhood illnesses, i.e., diarrhea, acute respiratory infections, measles, malaria, acute malnutrition;
- Tuberculosis treatment in non-infectious stages;
- Control and treatment of sexually transmitted diseases (STDs).

Health policy developments of the past several years suggest that Peru is willing to dedicate additional resources for PHC in order to strengthen the above-listed essential services and enable expansion of primary care to a broader range of common chronic and acute medical conditions.

2. Financing Methods and Rate-Setting Strategies

The API design aims to strengthen the ambulatory services, particularly PHC, by introducing financing mechanisms that will support structural shift in the health care sector towards ambulatory settings and encourage ambulatory care providers to do more and better in terms of prevention, diagnostics, treatment, planning, and coordination of care for individual patients, as well as health risk assessment, health education, counseling, and other appropriate public health activities at the family and community levels.

Ideally, the ambulatory financing system ought to support all of the following professional traits, attributed to the "Five Star" PHC provider[4]:

1. *Care provider*, who considers the patient as an integral part of a family and the community and provides high standard clinical care (excluding or diagnosing serious illness and injury, manages chronic disease and disability) and personalizes preventive care within a long-term trusting relationship.

2. *Decision maker*, who chooses which technologies to apply ethically and cost-effectively while enhancing the care that he or she provides.

3. *Communicator*, who is able to promote healthy life styles by emphatic explanation, thereby empowering individuals and groups to enhance and protect their health.

4. *Community leader*, who having won the trust of the people among whom he or she works can reconcile individual and community health requirements and initiate action on behalf of the community.

5. *Team member*, who can work harmoniously with individuals and organizations, within and without the health care system to meet his or her patients' and communities' needs.

Successful performance of the above-listed functions (processes) raises standards of quality, effectiveness, and accessibility of care, which, in turn, leads to positive health outcomes in the enrolled populations. The systems of ambulatory financing should provide a realistic and balanced approach to supporting care *processes* with adequate resources, and rewarding GPs for higher *standards* of care. Given that the link between PHC and health outcomes is frequently complicated by many external factors outside the primary health provider's control, a direct connection of financing to health outcomes is problematic in any health care system.

To strengthen and optimize PHC processes and standards, the public purchasing authority, according to the proposed design, will finance providers of PHC by a combination of (a) fixed

[4] Frontline Doctors of Tomorrow. *World Health*, 1994, 47(5). WHO, Geneva.

capitation budget, (b) cost-based fees per unit of service, (c) user co-payments, (d) "cross-cutting financing", (e) year end distributions to reward high standards of care and performance.[5]

The following sections detail each of the aforementioned payment mechanisms.

2.1 Prospective Capitation

Prospective capitation is a method of budgeting under which the health care provider receives a predetermined payment for each enrolled person. In return, the provider agrees to supply a specified range of care to any member of the defined population on an as-required basis during a period of time stipulated by the terms of enrollment and contract with the purchaser of care.

Health care systems as diverse as those of the United States and Great Britain have been using prospective capitation for the past 15 to 20 years. These and many other countries accumulated substantial empirical evidence of the strengths and weaknesses of this method. The next subsection provides a brief summary of the key concepts and features of prospective capitation.

2.1.1 Key Features by Design and in Practice

By design, capitation entails the following characteristics:

- The annual budget of a capitated provider is the product of multiplication of a per capita amount of financing (hence, the *capitation rate*) and the size of the patient population (hence, the ruling principle of capitation is "the money follows the patient").
- Both the capitation rate and patient population are fixed for the year in a purchaser/provider contract. The resulting capitated budget is also fixed. It, thus, constitutes a method of predetermined or *prospective* budgeting.
- The approach increases predictability of health care costs for the payer.
- A provider on capitated budget is at financial risk of over-spending that budget and, therefore, has a strong incentive for managing care in a cost-effective way. This encourages the minimization of costs by means of cost-effective clinical strategies, reduced referrals to more expensive levels of care, prudent procurement, and utilization of input resources.
- The purchaser does not itemize the capitated budget by kind of resource. The provider may distribute its revenues across specific production inputs as deemed beneficial for its goals. Since prospective capitation is devoid of micro-management, it encourages provider autonomy over organizational and financial issues.

[5] The pluralistic approach to PHC financing has come to be regarded as a preferred alternative to any one method. The following statement reflects such preference: "The three main payment mechanisms for health professionals are salary, capitation, and fees for items of service, and each of these has well recognized advantages and disadvantages. Rather than relying on just one of them, a mixture can be used to encourage the best distribution of effort between the different tasks, especially where payment can be related to performance indicators". *Making Medical Practice and Education More Relevant to People's Needs: The Contribution of the Family Doctor*. A working paper of the WHO/WONCA, Geneva, Hong Kong, 1996: 53.

- Prospective capitation stimulates effective health risk and care management through its incentives for prevention and continuity of care.

- Prospective capitation is neutral to the quality of care.

- *Partial capitation* includes some services, i.e., primary and part of secondary care. *Full capitation* covers all services with specified exclusions.

- A provider on capitated budget usually performs the *fundholding* and *gate-keeping* functions. As the fund holder, the provider enrolls the eligible population for comprehensive care, receives the capitated budget, and uses funds to pay for its own services, as well as for services of the participating referral providers. The higher the referral rates are, the larger part of the capitated budget goes to referral providers. The fund holder tends to refer less, thus, controlling the flow of patient to higher levels of care (hence, the gate-keeping role).

- Any type of provider can become the fund holder and control the capitated budget. Under a common scenario, a PHC provider would hold the capitated budget and distribute the funds between primary and higher levels of care. In this case, PHC providers are well placed to enhance PHC and reduce utilization of secondary ambulatory and inpatient care (if the latter is included in a prospectively capitated budget). A shift toward PHC is beneficial for both patient's health and cost-efficiency in the health care sector.

- Prospective capitation necessarily involves a formal process of patient enrollment, based on the free choice of PHC provider, or a choice restricted by place of residence, employer- or insurance-based affiliation.

- Prospective capitation usually liberalizes the consumer choice of provider while, at the same time, containing indiscriminate "doctor shopping", unnecessary visits, tests and prescriptions. The fundholding PHC provider would steer the patient to one of pre-selected referral providers, with whom it pre-negotiated care strategies and reimbursement fees.

In documented practice, prospective capitation revealed the following flaws[6]:

- There is a substantial problem of risk selection, i.e., avoidance of enrollees who might demand more care than on average and, therefore, incur high costs to provider.

- Provider willingness to minimize costs and stay within budget can boil down to hidden or explicit denial of care, i.e., through lengthened waiting times to appointments or by avoiding appropriate diagnostic tests and prescriptions.

- Prospective capitation can become adverse to quality of care unless provider is committed to high professional standards, has to compete for patients, operates under an adequate level of financing and has access to adequate management systems that organize care delivery and patient tracking.

- If a PHC provider is the fund holder in the prospectively budgeted system, and the capitated

[6] See for example: Barnum H., Kutzin J., Saxenian H. Incentives and Provider Payment Methods. *International Journal of Health Planning and Management*, 1995 (10): 23-45; Aas, I.H. Incentives and Financing Methods. *Health Policy*, 1995 (34): 205-20.

budget does not cover secondary and tertiary care, a PHC practitioner would feel tempted to refer patients upward, thus shifting costs to specialists and hospitals and causing the overspending to be system wide.

- A general practitioner under prospective capitation who is known to be less restrictive on referrals to specialists and hospitals, would gain popularity among patients and, therefore, larger enrollment.[7]

- Structural distortions, caused by the above-described provider behaviors, can lead to implosion of PHC, thus, negating an important *raison d'être* for the capitated budgeting.

2.1.2 Rationale and Prerequisites for Application

The recommendation of prospective capitation as the core method of the ambulatory financing design does not stem from the definitive superiority of this method. Instead, it relies on the following practical considerations:

1. Prospective capitation supports policy goals that lie at the heart of health care reforms in Peru. The undeniable gain from this method of financing is increased participation of PHC practitioners in determining clinical, referral, and resource allocation strategies; and liberalization of consumer choice.

2. Prospective capitation is better than any alternative. In particular, it is better than the salaries or fee-for-service because:

   a. It is not viable to expect doctors who are exclusively on public salaries to diversify their clinical responsibilities, increase workload, and maintain health of their patients with the focus on long-term strategies of prevention. Intelligent use of prospective capitation, on the other hand, will lead to increased productivity, long-term orientation, self-esteem, and consumer-friendliness of PHC providers.

   b. Fee-for-service does not compete with prospective capitation because of the counterproductive dependence of provider financial interests on the volume of services. If providers are rewarded for delivering more services rather than managing the overall health of their patients, they may inflate utilization without regard to the overall contribution that such services make to the health status of the patient. In a capitated system, the provider will have to work hard to implement better care, reduce morbidity and complications and will be rewarded for doing so. Prospective capitation favorably contrasts with fee-for-service because, unlike fee-for-service, it does not affect revenues of providers who render care in a prudent, cost minimizing way.

3. Potential flaws of the method can be attenuated by design strategies that enable key prerequisites for successful implementation and complementing prospective capitation with other methods of financing.

[7] Pinto, Matilde, Andersson, Bernt. *Paying Health Care Providers in the Caribbean*. Pan American Health Organization, Washington, DC, 2001: 22.

Preconditions for successful use of the capitated budgeting are described below:

Open enrollment. Patient's free choice of providers is critically important for inducing quality of care within a capitated service delivery system. Patients ought to have the right to vote with their feet against ineffective and uninvolved GPs. GPs that compete for the patient population are more attentive to considerations of quality and accessibility of care than area-serving PHC practitioners.

Standing relationship between the provider and the patient. Terms and conditions of enrollment ought to assign patients to GPs for at least one year. Family enrollment should be strongly encouraged over individual enrollment. Serving a steady enrollment pool over a significant period of time will give GPs sufficient operational space for improving standards of care and health management. Durable enrollment will boost GPs' long-term motivation and allow adequate evaluation of the impact of the provider's management of care. PHC providers will feel they have enough time for designing and implementing prevention strategies, and also, for reaping the cost-saving effects of those strategies that would usually unveil themselves over several years.

A realistically inclusive scope of capitation. If a capitated budget is confined to PHC, GPs will try to shift care to other levels in order to reduce their costs. Capitation should be comprehensive enough to cover at least primary and secondary care. This will interest GPs in increasing their revenues by substituting for part of the services that were traditionally in the domain of ambulatory specialists. The extension of prospective capitation to inpatient care is a viable medium-term goal. Over time, GPs will increase their clinical and management skills up to the levels at which they would be able to provide hospital-substituting services and control inpatient care and expenditures.

Guided consumer choice. GPs will have to manage consumer behavior by steering patients to the participating referral providers, i.e., diagnostic facilities and specialty physicians with whom they have agreed on care strategies and reimbursable costs. GPs ought to maintain a subtle balance between restricting patient choice and keeping the patient content. This requires that GPs (a) sign subcontracts with competent specialists and well-equipped diagnostic offices; (b) achieve full clarity with referral providers on standards of care, thus making the levels of care and interpersonal relationships predictable to consumers; (c) inform patients of the possibility to access non-network providers at a higher co-payment rate. Correspondingly, terms of enrollment ought to entail an increased co-payment in the event of self-referral for secondary services or the choice of non-participating referral provider.

Risk adjustment. In order to abate the problem of risk selection, i.e., denial of enrollment or care to patients with higher than average health needs, the capitation rate ought to be differentiated according to a carefully selected set of health risk variables. Subsection 2.1.4 presents the issue of risk adjustment in more detail.

Complementary methods of financing. The fixed character of prospective capitation ought to be deluded with a sensible element of variable financing in order to make GPs more conducive to specific health needs, modernized PHC strategies, and quality of care requirements. The proposed solution includes a mix of volume- and performance-related methods of payment, described in Section 2.4.

Improved supply of resources by means of better funding of GPs. The capitation rate ought to include enough funds for enabling access to effective drugs so GPs could treat a wide range of conditions in primary care where success depends mainly on the availability of pharmaceuticals, competent prescription strategies, and management of treatment regiments by PHC practitioners.

Better pay to GP staff is of paramount importance for their competent and responsible approach to the management of health risks, diseases, and care.

GP operational and management autonomy. Prospectively fixed budgets will expose GPs to substantial risks of budget overrun. In order to cope with these risks, GPs must behave with great managerial composure, i.e., maintain practice configuration and staffing schedule in accordance with evolving care strategies and volume of activities; deal with effective and efficient referral providers; shift revenues across expenditure items; optimize resource procurement; choose between the in-house provision and outsourcing of ancillary medical and logistical services. They will also have to develop patient management systems that provide adequate information to allow prospective management of a patient's health care needs.

Retention of savings. Cost minimizing provision of quality PHC should not result in the downward revision of capitation rates. Instead, savings should apply to strengthening the GP resource and clinical bases.

2.1.3 Capitation Rate Setting

The Bottom-up Method

This approach maintains focus on each service in the range of capitated care. The monthly capitated budget is 'assembled' of service-specific costs and utilization rates according to the following set of notations:

$$\begin{array}{c} PMPM_2 = Cost_2 \; x \;\; Use_2 \\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + \\ PMPM_n = Cost_n \; x \;\; Use_n \\ \hline PMPM_t = Cost_t \; x \;\; Use_t \\ CB = PMPM_t \; x \; Pop \\ PMPM_t = CB \; / \; Pop \end{array}$$

where $PMPM_n$ is per member per month cost of service n, Use_n is per capita utilization rate projected for that service, $Cost_n$ is the service unit cost. The aggregate capitation rate $PMPM_t$ is the total of service-specific PMPM rates. Multiplying this rate by enrolled population, Pop, yields a cost-based monthly capitated budget, CB.

Table 1 presents a sample worksheet for testing the bottom-up method. Line-wise, the worksheet displays patient examination procedures, diagnostic tests, and medications involved in cases of bronchial asthma in children. The development of similar lists for other relevant conditions will help produce a comprehensive catalogue of interventions and activities for the reformed PHC in Peru. The Current Procedural Terminology (CPT) titles and codes of procedures could be mapped into the codes and titles of ICPC-2 (International Classification of Primary Care-2), thus becoming compliant with the widely accepted international classification of PHC problems/complaints, diagnoses, and procedures (see the following chapter for a description of ICPC-2).

The tedious part of developing service-specific components of the capitation rate has to do with filling out columns of Table 1. This exercise involves identification of care-giving settings for each specific procedure (Columns B through D), estimated utilization of direct labor, i.e., time of

physicians, nurses, and other directly involved personnel (Columns E through G), minor and durable equipment (Columns H through J), and pharmaceuticals (Column K). Summing up the aforementioned resources yields total direct costs per procedure per encounter.

Subsequently, the experts will estimate the frequency of utilization of each procedure, i.e., per 100 encounters (Column L), the number of encounters per patient per year (Column M), Disease incidence rate (Column U), and Disease prevalence rate (Column V).

With all these data at hand, the calculation process presented in Figure 2 will produce *procedure-specific direct resources per enrollee per year*. The proposed calculation distinguishes between new and all registered cases, assuming there may be a significant divergence in case management and required resources between the two categories of cases.

To estimate the procedure-specific components of the capitation rate, the product of calculation in Figure 2 should be converted in values. This will involve a three-step process:

- Pricing direct inputs, based on labor compensation rates, prices of pharmaceuticals, and book value and depreciation function by type of medical and other 'direct' equipment.

- Estimating indirect costs of GPs by means of step-down allocation of costs among intermediate and revenue earning cost centers.

Table 1. A Worksheet for the Estimation of Direct Resource Inputs by Relevant Condition in Primary Care Patients: The Case of Bronchial Asthma

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1																							
2		Per encounter												Resources, per patient-year									
3		Caregiving setting			Labor				Durable equipment					Labor				Durable equipment					
4	*Bronchial Asthma*	Office-based	Home	Other	Physician	Nurse	Miscellaneous	Minor equipment	Medical installations	Transport	Pharmaceuticals	Utilization frequency per encounter	Number of encounters per year per patient	Physician	Nurse	Miscellaneous	Minor equipment	Medical installations	Transport	Pharmaceuticals	Disease incidence rate, new cases per 1 enrollee	Disease prevalence rate, patients per 1 enrollee	
5	*Instructions and clarifications ==>*	Check appropriate cell with "X", one per line-item. If more than one setting is applicable for respective procedure, duplicate the line-item, e.g., "General exam, office-based" and "General exam, at patient's home"			Time in minutes. Specify category of miscellaneous personnel, e.g., "Driver, 60 min" (e.g., based on an average round-trip commute per 1 home visit in a polyclinic service area in Yerevan)			Equipment title and minutes in use, per encounter			Go to column "T", if per-encounter estimation is not possible or applicable	A ratio of 0.2 will mean that one out of 5 visits by asthmatic patients will involve respective procedure	For acute patients – the number of encounters to be tracked; for chronic patients the number of encounters per year						Enter number of pills or doses per patient-year	For acute cases	For the chronically ill	
6	**Physical Examination, office based**																						
7	General examination (particular attention to breathing)													0	0	0	0	0	0	0			
8	Lung auscultation (lasting expiration)													0	0	0	0	0	0	0			
9	Examination of nose, throat, ear and related centers in case if there are signs of infection in upper respiratory track													0	0	0	0	0	0	0			
10	Presence of scrofulo-rachitism in condition of atopic / allergic / predisposition													0	0	0	0	0	0	0			
11	Cardiovascular and lung examination in case of dyspnea of new-born children (particular attention to costals movement, frequency of breathing and noises)													0	0	0	0	0	0	0			
12	**Additional [Diagnostic] Methods**																						
13	Pneumotachometry – reduction of expiratory flow rate													0	0	0	0	0	0	0			
14	Peak flow meter - reduction of peak expiratory flow rate and increase of amplitude of indicators during a day													0	0	0	0	0	0	0			
15	Spirometry - reduction of expiratory flow rate in the first second													0	0	0	0	0	0	0			
16	Spirography (to define Tiffno indicator – relation to total lung capacity)													0	0	0	0	0	0	0			
17	Treatment													0	0	0	0	0	0	0			
18	Adrenalin													0	0	0	0	0	0	0			
19	Aminophylline													0	0	0	0	0	0	0			
20	Hydrocortisone													0	0	0	0	0	0	0			
21	Corticosteroids																						
22	Beclomethasone dipropionate	84 – 336 mkg	336 – 672 mkg	> 672 mkg	Inhalation	1 dose 42 or 84 mkg	---------->																
23	Budesonides	100 – 200 mkg	200 – 400 mkg	> 800 mkg	Inhalation	1 dose 200 mkg	---------->																
24	Hydrocortisonum	200 mkg			Intravenously, subcutaneously	once in 6 hours	---------->																

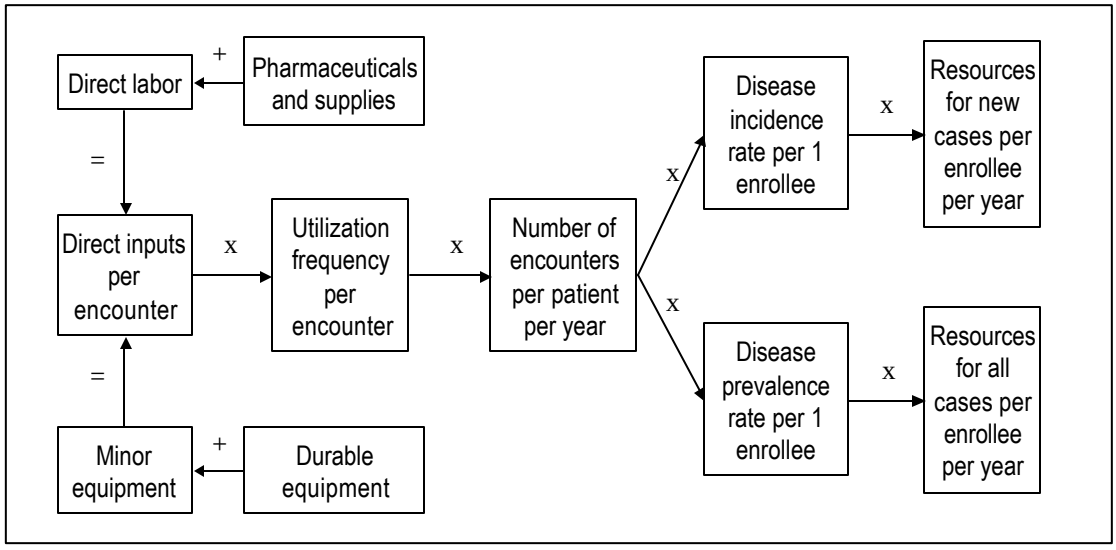
- Calculation of GPs full (direct + indirect) costs, and calculation of the loading factors, i.e., ratios that relate full to direct costs. Multiplying direct costs by loading ratios will produce aggregate service costs.

The adoption of CPT for procedure coding and SICI (*El Sistema de Costos e Ingresos)* for cost accounting will facilitate an experimental application of the bottom-up method in the ambulatory health care sector of Peru.

The Top-Down Method

This approach provides for a methodological shortcut in the absence of service-specific data on costs and utilization. It suffices to divide an annual historical budget by population in the GP original service areas, to produce a fairly accurate estimation of per capita spending and, therefore, annual and monthly rates per enrollee. In the setting of Peru, this rate must be increased to account for the following changes in PHC financing:

Figure 2. Estimation of Direct Inputs per PHC Procedure per Enrollee per Year, for New and All Cases



Salary rates ought to be upgraded in line with the increased skills, responsibilities, and workload of PHC providers.

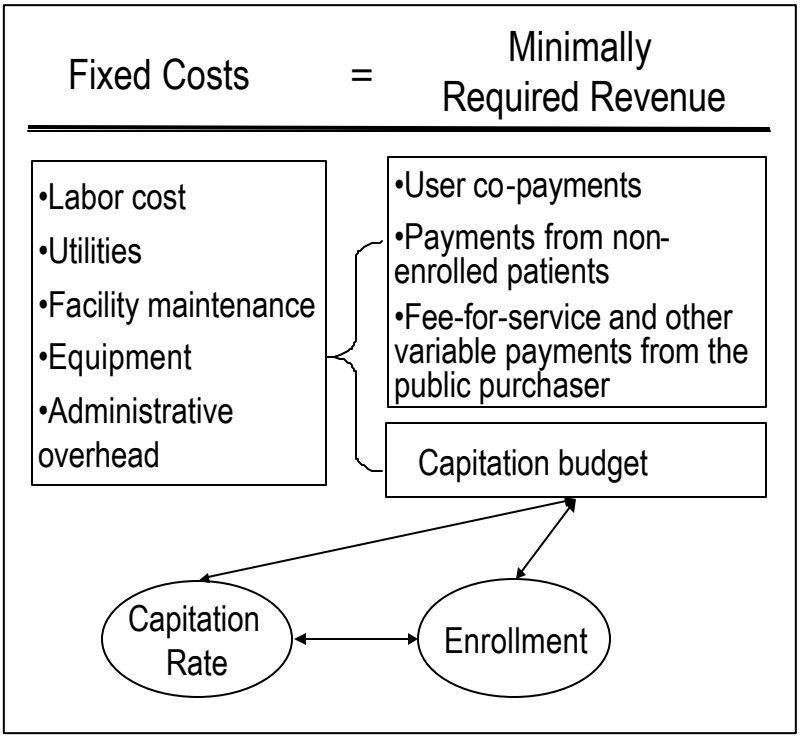
Larger spending on *pharmaceuticals and health supplies* will stipulate another upward revision in the baseline capitation rate. The MINSA ought to review the publicly funded essential drug list, price that list according to viable procurement protocols, estimate the annual need for pharmaceuticals in physical and value terms, and project the share of the drug bill to be covered by patients. The public purchasing agency ought to make a commitment to finance the public part of the national drug bill and, therefore, factor it into the capitation rate.

Depreciation ought to be added to the list of GP expenditures. Practices, thus, will start earning funds for the replacement of their fixed assets. Over time, this innovation would lead to decentralized capital investments and contribute to the management autonomy of GPs in Peru.

The Minimal Revenue Requirement Method

This approach focuses on the link between provider revenue and financial viability. To prevent insolvency, a GP must recover fixed costs of its operation, including labor, utilities, facility maintenance, equipment, supplies, and administrative overhead. The GP fixed cost, thus, becomes the *minimal revenue requirement*. Part of this revenue will be generated outside the capitated budget, i.e., from enrollees' co-payments, non-enrolled patients, expected revenue from fee-for-service, "cross-cutting" financing, and miscellaneous sources. GPs would have to earn the remaining amount under prospective capitation. Dividing that remaining amount by the number of enrollees results in the minimally required capitation rate (Figure 3).

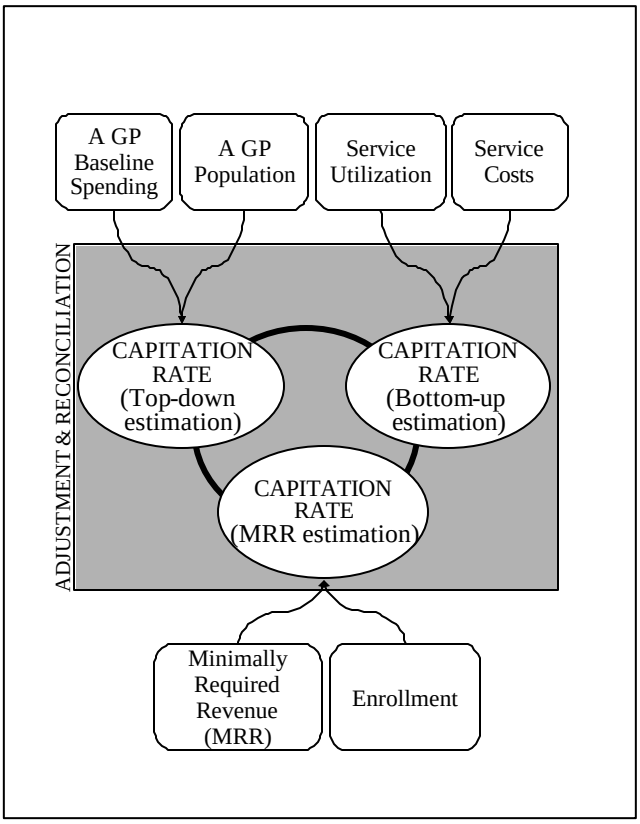
Figure 3. Capitation Rate Setting Based on Minimal Revenue Requirement



Under this method, the revenue is held steady. The capitation rate, therefore, is derived from the enrollment and inversely correlated with the enrollment size. If administrative control or competition depress prices, it may be hard to increase capitation to make up for the lack of enrollees. Therefore, retaining and increasing enrollment becomes particularly important for leveraging provider revenue and meeting the minimal revenue requirement.

Estimations based on the above-described approaches (top-down, bottom-up, and minimum revenue requirement) should interact to ensure accurate and flexible approach to the capitation rate setting. The estimation process may begin with the simplest top-down calculation to ascertain the historical per capita spending in the local area and/or specific GP. The resulting capitation rate will be compared to the bottom-up calculation of per capita spending, based on estimated service-specific rates. The required minimum revenue approach will be used to bridge the first two methods. Figure 4 depicts an interactive and iterative use of the three algorithms.

Figure 4. Iterative Use of the Three Methods of Capitation Rate Setting



2.1.4 Risk Adjustment

An important question in the context of prospective capitation is to what extent, if at all, the capitation rate should be differentiated in order to account for variation of health risks within GP populations. To keep the capitation rate uniform would be unfair to GPs who serve relatively unhealthy populations and, because of that, need more resources. If, on the contrary, differentiation is introduced across many risk groups, the methodology of such differentiation, i.e., *risk-adjustment,* becomes a complex affair, requiring vast amounts of information for maintaining and updating a highly differentiated capitation rate schedule.

A commonly recommended approach to risk-adjustment entails differentiation of the capitation rate on the basis of a limited number of variables, characterized by the highest explanatory power, reliability, administrative simplicity, invulnerability to manipulation on the part of providers, and inducing no counterproductive change in provider behavior.

A review of numerous studies in risk-adjustment allows one to distinguish and rate by importance the following three groups of variables that explain variation of health needs across populations [8]:

- *Sociodemographic factors*, such as age, gender, place of residence, income, educational status, family size, (un)employment status, account for about 20 percent of the variation of need for health expenditures among individuals.
- *Past health expenditures* predict about 60 percent of the non-random variation of the future health expenditures.
- *Chronic sickness* explains 15 percent of non-random variation.

Importantly, in the context of health care reforms in Peru, a preferred risk-adjustment methodology should not be excessively biased towards prior health care utilization and expenditures because such bias will perpetuate under funding in the disadvantaged areas and health facilities, and will benefit providers with a historically better access to resources regardless of the need for their services.

The application of risk adjustment ought to be limited to the third party financing. Higher health risks should never result in higher payments for individual consumers of medical care, be those payments in the form of insurance premiums or user charges at the point of service. (In theory, it might be possible to consider a retrospective payment based on demonstrated adverse selection.)

2.2 Variable Financing

Variable financing will supplement the prospectively fixed capitation budget in order to strengthen specific activities in, and standards of, PHC. Revenues from service fees and, to a certain extent, from user co-payments will depend on and stimulate volumes of services. Performance indicators will determine GP revenues from "cross-cutting" financing and target payments linked to "Standards-of-Care Index" (SCI). The following subsections describe each of the proposed tools of variable financing.

2.2.1 Fee-for-Service

The known pitfall of fee-for-service is the strong incentive that this method of financing creates for over-utilization of services. However, when applied on a selective basis, it can be instrumental in assuring the adequate volume of critically important interventions, particularly, if prevention is put at the forefront of fee-based financing.

Notably, prospective capitation also favors prevention for its cost reduction potential. However, many PHC providers do not expect to retain their patients for long enough to be able to reap the benefit of prevention. This is particularly true of urban areas with mobile population. Therefore, the near-term perspective on cost containment may overshadow long-term strategies and lead to the

[8] The Reform of Health Care. A Comparative Analysis of Seven Countries. Health Policy Studies No. 2. Organization of Economic Cooperation and Development, Paris, 1992.

reduction of critically important activities in preventive care. Fee-for-service has the potential to offset this undesirable effect of prospective capitation.

Support with the fee-for-service payments will be quite appropriate in the case of children's immunizations with vaccines, mandated by the National Immunization Schedule. An illustrative rule sets forth that GPs will attain the 60-percent coverage on EPI antigens by using resources from their capitated budgets. Each timely immunization beyond the 60-percent threshold would be rewarded with a cost-based fee. Similarly, GP practitioners would receive a fee, based on their hourly rates, for five hours of home visits per year and five hours of presentations at the town meetings, in support of family and community health management activities.

The second rationale for a limited use of fee-for-service is to introduce costly procedures in PHC, required by the expanded scope of primary care. Some of these procedures can repel GPs because of their immediate impact on practice costs. PHC practitioners would prefer to adhere to the established practice of referring patients to hospitals for relatively complex procedures, thus divesting themselves of additional costs. In Great Britain, under the 1992 U.K. National Health Service Regulations, general practitioners receive "fees for items of service" that apply to contraceptive and maternity services, cervical cytology, and minor surgeries (as well as the above discussed immunizations)[9].

The stakeholders in the ambulatory care modernization in Peru ought to decide which items from the CPT and ICPC-2 classification lists they would like to finance by means of fee-for-service. The share of revenues from this method of financing should not exceed a modest percentage of the GP total budget.

2.2.2 Co-payments

User co-payments at the point of service aim to dissuade patients from unnecessary utilization of care and make consumer behavior more consistent and collaborative with GPs. The national health care reforms seek to relieve the patient from erratic and unaffordable charges, particularly in PHC, and, at the same time, improve the collection of legitimate fees. Fair remuneration of GP staff, public co-financing of essential drugs, strong punitive action against inappropriate and inadequately transacted charges, are the tools for removing the economic barriers from patients' way to quality primary services. The following strategies enable equitable and efficient application of user co-payments:

- The poor will be exempt from co-payments, according to the multi-variable targeting formula, designed in Peru.
- Co-payments will be established at the levels that will not deter non-exempt enrollees from seeking primary care.
- Co-payments may not apply to certain types of medical contacts, i.e., follow-up visits and contacts for health education purposes.
- A GP will charge its patients for their self-referral to a higher level of care, i.e., for

[9] *The National Health Service (General Medical Services) Regulations 1992*. Statutory Instruments. No.365. National Health Service, London: HMSO, 1992.

bypassing the GP on the way to specialty consultation, at the tentative 20 percent of customary and usual cost of the respective service. In the event of an urgent need for medical care away from home, the 20-percent co-payment will be waived. However, patients may be liable for the excess of actually billed amount over customary and usual cost. The latter is the reimbursable cost of a given specialty service that the GP had negotiated with its referral providers.

- GPs will charge their patients for choosing non-network providers of specialty care at the illustrative 30 percent of customary and usual costs.
- Co-payments will be properly transacted. GPs must issue receipts on each payment and provide their enrollees with contact numbers for, and clear-cut rules of, consumer grievances and redress procedures.

2.2.3 "Cross-cutting" Financing

Various authors term this concept differently, i.e., blended, bundled financing, risk/bonus pool[10]. The proposed term of "cross-cutting financing" emphasizes the key characteristic of the method: an allocation strategy targets multiple providers in order to encourage them to coordinate their clinical resources and activities for a better care in a specific clinical condition.

It is envisioned that general practitioners, ambulatory specialists, and hospitals would form a clinical and management alliance to design and implement more effective and efficient ways of treating a high-volume medical condition. Such a team would use scientific knowledge and practice evidence to analyze the clinical problem and arrange for its coordinated management. Providers at various levels of care would pool part of their resources that they historically used to treat a particular condition. Then they would decide where and how this condition should be managed in order to save resources throughout the system. The proposed approach is particularly promising if services across the continuum of care are substitutes for each other, i.e., what the hospital traditionally did to treat a given disease, a health center and a physician practice can do as well. Activities aimed to achieve savings would be designed jointly and funded from shared resources. The cost minimizing strategies usually focus on strengthening prevention, moving treatment to outpatient care, guiding patients towards self-care, and developing outreach monitoring and control. The pooled funds can be spent on modern medicines, diagnostic equipment, monitoring devices, family education, additional training of PHC doctors, time of hospital-based doctors for outpatient consultations, and tutoring ambulatory specialists on new treatment and case-management techniques. These expenses ultimately result in savings because they lead to lower disease incidence and reduced frequency and length of hospitalization. Annual net savings are distributed to all contributors until the capitated budgets are gradually reduced to reflect lower expenditure.

The API ought to view the cross-cutting method of financing as an important experimental approach to increase continuity and efficiency of care. Bronchial asthma appears to be a good choice for a controlled testing of this method. The following example illustrates the savings potential of switching to alternative strategies of asthma management. A self-management pediatric asthma program conducted in the United States through seven weekly one-hour sessions taught by nurses in the patients' homes, resulted in a 61 percent reduction in hospitalization and a 46 percent reduction in

[10] See for example: Welch WP. Bundled Medicare Payment for Acute and Postacute Care. *Health Affairs*, 1998, 17(6): 69-81; Committee on Quality of Health Care in America. *Crossing the Quality Chasm: a New Health System for the Twenty-First Century*, National Academy Press, Washington, DC, 2000, 188-9.

physician visits as compared with pediatric asthma patients nationwide. The annual asthma-related cost savings are estimated at $11,500 per patient[11].

To promote cross-cutting collaboration for a better management of asthma, the purchaser of care, or the fundholding element of a prospectively budgeted provider system (see Section 3.2) should form a pool of funding out of which they will pay (a) hospital and ambulatory specialists for the time that they will spend with GP staff; (b) drugs and supplies that GPs should make available for asthmatic patients; (c) 50 percent of consultation time that GP staff will spend on guiding their enrollees toward a new approach to self-care and support of asthmatic patients. The SCI (see next subsection) may reflect the reduced hospitalization rate in patients with chronic asthma, thus linking part of the GP variable financing to the effort of modernizing clinical strategies for bronchial asthma.

In the above-presented example, the cross-cutting financing gravitates toward fee-for-service (See Subsection 2.2.1) and performance-based payments (Subsection 2.3). The method will reveal itself in its pure form after the hospital sector adopts the case-based budgeting, i.e., according to health resource groups, developed under the Hospital Payment Experiment in Peru in 2000-01[12]. Under the global budgeting, based on prospectively determined caseload and case mix rates, the purchaser of care will pre-finance a hospital for a historical number of inpatient cases of asthma. The hospital will use part of these funds to empower local GPs for a more effective management of asthma in the PHC setting. Expenditures will cover trainers' and trainees' time, additional workload and demand for pharmaceuticals. At the end of the year, the hospital will estimate its savings from reduced admission of asthmatic patients, net of expenditures on activities that enabled those savings, and will distribute net gains among the contributors to, and participants in the process. The purchasing agency will gradually reduce its order for inpatient asthma cases in line with declining admission rates. Part of the system-wide savings from reduced hospital expenditures on asthma, the purchaser will allocate to PHC to ensure that GPs use their newly acquired skills of asthma management on a sustainable basis.

Besides asthma, the stakeholders in cross-cutting clinical and resource management may select the prevention and treatment of STDs, tuberculosis, hypertension, and diabetes as viable areas of provider collaboration.

2.3 Performance-based Financing

The previously discussed elements of variable financing will generate GP revenues in addition to the fixed capitated budgets. Conversely, the performance-based financing forms the variable part of the fixed capitated budget. According to the basic arrangement of prospective capitation, the payer will commit a predetermined amount of funding and prepay it to GPs by monthly installments. At the same time, the purchaser will withhold part of the capitated budget and will distribute it at the end of the year. The payer will adjust the amount of such distributions for the level of attainment of certain performance targets by specific GPs.

The current design proposal centers the concept of performance targets on care delivery processes rather than health outcomes. The design, thus, counters popular attempt to link PHC

[11] Olsten Health Services. Children's Asthma Management Program Reduces Costs, Helps Families Cope. Press Release, July 1999. Internet: *www.okqchomehealth.com/pressrelease/press1.html.*

[12] See: Telyukov A. *Design Report 3: Health Resource Groups and Parameters of Casemix Reimbursement for the Hospital Sector of Peru.* PHR Technical Report No.63. Abt Associates Inc., Bethesda, MD, March 2001.

incentives to population health gains. Multiple adversities affect health of the Peruvian population while remaining beyond control of health care providers. A significant part of the GP effort is bound to be lost to socioeconomic privations that impact the patient's circumstances and health situation, for which GPs should not suffer. At the same time, there should be strong incentives for GPs to do their best in abating health risks and maintaining health of their enrollees.

The proposed SCI comprises variables that reflect three broadly defined performance results of PHC:

- Critically important medical care did not bypass GP enrollees and was provided to them at the crucial moments in their lives in a palatable way;
- GPs consistently took resolute action to prevent disease, and promptly detect and respond to its incidence;
- GPs stayed in active communication with their enrollees on the key public health issues and agendas. Patients and families understood the importance and content of public health messages and adjusted their behaviors accordingly.

Table 2 features 21 indicators that can serve as proxies of the above-listed performance results. These indicators, in part, were designed for API and, in part, adapted from the sets of indicators, internationally recommended for the PHC quality monitoring and control. Stakeholders in API ought to validate the proposed list. The total number of variables should be commensurate with the data gathering capacity of the system. The main sources of information for the proposed SCI variables include a GP clinical audit, patient exit survey, patient enrollment and encounter system, and household survey.

A final list of variables will be used in a multiplicative, additive, or alternatively designed function that will calculate annual values of SCI for specific GPs.

The function's parameters will include weights, thresholds, and elasticities for each variable. *Weights* determine the quota of each variable in the SCI aggregate value, i.e., the 5-percent value uniformly assigned across 20 variables implies that each variable equally contributes to the SCI overall value. *Thresholds* are target benchmarks, i.e., levels to be attained by a GP on specific performance criteria. Every time a GP scores below a benchmark, it loses on its SCI aggregate score. For most variables the targets are zero or 100 percent. The interim targets may be set short of the ideal values. For example, the proposed benchmark for indicator 3.4 "Immunization coverage rates for EPI antigens" is 70 percent. Coverage reported below 70 percent will result in a discount from SCI value. Immunizations beyond the 70 percent coverage rate will be reimbursed on a fee-for-service basis (see Subsection 2.2.1) and therefore will not add to the SCI value. On most indicators, however, the over-achievement would lead to an increase in the total score. *Elasticities* characterize the intensity with which a variable-specific score responds to the deviation of the reported statistic from the target value.

The parameters of an SCI function will evolve in the course of an experimental design process that will include the selection and iterative calibration of the function on the basis of empirical data. A mature version of the initially simplified SCI function will, thus, become an API's important methodological output.

Table 2. Proposed Components of the Standards-of-Care Index for GP Performance Evaluation and Financing

Interventions and Activities	Standards of Care and Performance	Data Source
Antenatal care	1.1 Percent of women with at least three consultations before delivery with basic lab tests and office-based diagnostics 1.2 Percent of women with the first antenatal consultation at a gestational age of 16 weeks or less 1.3 Referrals to hospitals prior to child delivery, as percent of cases in which such referral was appropriate	Clinical audit, Patient/ household survey
Care of the newborn	2.1 Percent of newborns, visited or otherwise contacted by a GP provider on a pre-scheduled basis	Patient/ household survey
Child care, nutritional surveillance, immunization	3.1 Percent of pre-school children with the required frequency of PHC contacts 3.2 Percent of children with adequately measured and recorded weight 3.3 Percent of mothers who received indications of weight anomaly of the child 3.4 Immunization coverage by EPI antigen and other vaccines, required by the National Immunization Schedule	Patient/ household survey
Health education	4.1 Percent of enrolled population, addressed by health education activities, i.e., 'future mother' and 'young parents' courses, family planning consultations, materials about relevant public health risks and interventions 4.2 Percent of attendees who understood the key content, i.e., regarding immunizations, safe water, nutritious food, tobacco and alcohol use, family planning, etc.	Patient/ household survey
Epidemiological surveillance and control of epidemic and endemic diseases	5.1 Percent of enrolled families, promptly notified of a suspected or confirmed disease outbreak and advised by GP to take preventative measures, monitor and report symptoms, within a given number of days after disease had been reported	Patient/ household survey
Family care and self-care	6.1 Percent of households with stored water kept in well covered containers 6.2 Percent of households with schoolchildren's study space properly furnished and equipped	Household survey
Common diseases and provision of essential drugs	7.1 Percent of select diseases, diagnosed at advanced stages, i.e., breast cancer, TB, hypertension, diabetes, anemia in women and children 7.2 Percent of STDs and non-infectious TB cases, treated in ambulatory conditions with appropriate medications	Clinical audit
Overall care	8.1 Percent share of first contact through GP (or GP bypass rate) 8.2 Waiting time to appointment date 8.3 Waiting time on the phone line 8.4 Waiting time in GP office 8.5 Cases of untimely referral to specialist consultations or hospitals 8.6 Cases of nursing care and social support, coordinated with welfare and charitable institutions	Clinical audit, Patient/exit survey

Selected and adapted from: Roemer MI, Montoya-Aguilar C. Quality Assessment and Assurance in Primary Care. WHO, Geneva, 1988: 67-78; and in-house discussions with PHR*plus* experts.

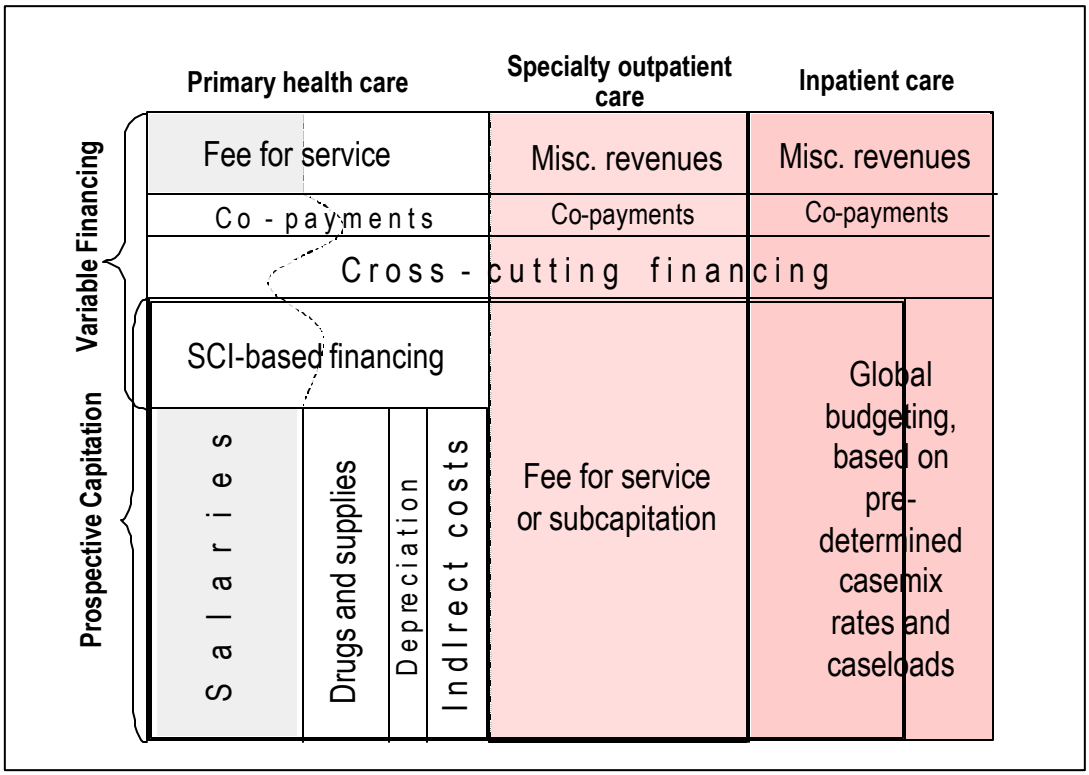
2.4 Patient Care Financing as a Mix of the Proposed Methods

The strategy of ambulatory care financing entails the capitated budgeting (Section 2.1) and variable payments (see Section 2.2). Figure 5 visualizes the proposed financing mix and collates it with the previously developed case-based financing for hospitals. The following paragraphs provide a verbal summary of the ambulatory payment tools according to Figure 5 and Sections 2.1 and 2.2. The principle that underlies the selection of financing method is to align the financing incentive with the desired clinical outline.

1. Capitated budgets will cover the costs of PHC, specialized ambulatory care, and, increasingly, inpatient care. The PHC part will reimburse for GP direct costs, including salaries and drug expenditures, as well as the newly recognized cost of depreciation. It will also provide for GP indirect costs, such as logistics and management.

2. Capitated budgets will pay for the secondary care furnished to GP enrollees. GPs will reimburse referral providers by procedure or on the basis of sub-capitation. Under sub-capitation, a GP will carve out part of its capitated budget and prospectively allocate it to specialists, based on projected amounts of specialty services and pre-negotiated division of labor between a GP and a referral provider. Sub-capitation would be a viable alternative to the fee-for-service in the absence of information and computer infrastructure for itemized billing per procedure. However, it might be full of pitfalls since the information base to adequately assess the expected volume does not exist. This approach ought to be considered with extreme caution.

Figure 5. An Integrated Approach to Patient Care Financing in Peru



3. The purchaser of care will defer part of the capitated budget until the end of the year, when GPs will receive it, adjusted for Standards-of-Care Index.

4. In addition to the fixed and variable parts of the capitated budget, GPs will receive revenues in the following three types of variable payments:

   a. Fee-for-service, i.e., cost-based fees per unit of primary services that the payer would designate for this method of reimbursement, e.g., children's immunizations beyond certain coverage rates, maternity services, high-priority activities in community-level health education. Fee-for-service revenues will also include payments by or on behalf of non-enrolled patients.

   b. Co-payments from non-exempt patients.

   c. Financing from a cross-cutting financing pool, i.e., a pool of funds for a collaborative effort of GPs, ambulatory specialists, and hospitals, aimed to attain higher clinical effectiveness and cost efficiency in managing and treating certain conditions. The purchasing agency and the fundholding provider within a prospectively budgeted provider system will work to identify priority conditions for cross-cutting management and financing. They will then combine and set aside parts of outpatient and hospital budgets that correspond to the baseline spending on these conditions and will use the newly established financing pool to reimburse participating providers for the costs of the actually provided services and cross-cutting collaboration, as well as to distribute savings achieved through modernized and better coordinated strategies of care. GPs will select ambulatory specialists and hospitals for the inclusion in a cross-cutting collaboration team.

5. Specialists and secondary-care diagnostic facilities will receive payments for services, rendered to patients who are not enrolled in the local GPs.

Prospective capitation will provide for a major part of GP and specialist revenues. SCI-based distributions would account, tentatively, for 30 percent of GP capitated budgets. Iterative simulations on the SIS and regional data would allow to project amounts and percent shares of revenues by proposed type of funding.[13]

2.5 Compensation of Physicians and Health Professionals

The individual compensation of GP partners and staff is a sensitive agenda, and requires a substantial consensus-building effort. This design recommendation is intended to provide a point of departure for a participatory discussion and experimental trials in the course of API.

The integrated provider networks in the health care sector of Peru lend themselves to prospective capitation. Although the configuration of such networks will vary (see Section 3.2), they all will include the PHC component, represented by a general practice, and the specialty care component. Physician practices include *partners*, i.e., physicians, and *staff*, i.e., nurses, community caregivers,

[13] International benchmarks vary. Reportedly, in Finland, family doctors receive 60 percent salary, 20 percent capitation, 15 percent fees, and 5 percent allowances. In Norway, capitation accounts for 50 percent of FM practitioners, fee-for-service 30 percent, patient co-payments 20 percent. Pinto, Matilde. *Paying Health Care Providers in the Caribbean*. Pan American Health Organization. Washington, DC, April 2001: 32.

and other medical and non-medical workers, whom partner physicians employ full time or at a significant share of their annual work time.

This section outlines a compensation strategy for GPs and ambulatory specialists.

During the year, GP partners and full-time staff would receive fixed monthly salaries according to the compensation rates, factored in the predetermined capitated or sub-capitated budgets and service fees (see shaded areas in Figure 5). Part-time staff will receive their monthly salaries according to the fixed hourly rates, factored in the pre-paid capitated budget and service fees, and reported work time.

At the end of the year, GP partners and full-time staff would receive year-end bonuses, based on GP revenues from SCI-based distributions and cross-cutting savings. GP partners will determine the total and individual amounts of such distributions on the basis of the following factors:

- Practice mission, values, and incentive strategy;
- Resource consumption and total amount of variable revenue;
- Business priorities of GPs, i.e., investment and cash reserve needs;
- Individual performance partners and staff members.

Since year-end payments are contingent upon a variety of factors, their amounts would be hard to predict. A curve on Figure 5 depicts the variable nature of these payments.

Specialty doctors and staff of diagnostic and rehabilitation services in HCN-participating facilities, although increasingly on fees from GPs, will continue to receive salaries from their host facilities for serving patients who are not enrolled in GPs.

At the initial stage of the API implementation, the per member 'slice' of the annual salary rate would be determined in the budget neutral way. This approach implies that if the enrollment per physician in a GP remains at its historical level, each of GP partners will earn his/her usual annual salary.

A number of performance variables would differentiate partner salaries, i.e.:

- Physician-specific enrollment size;
- Seniority: The concept of seniority may gradually shift from the total career record to the experience with a given GP;
- Patient volume (for specialists, in recognition of their popularity among referring GPs);
- Job responsibilities;
- On-call work time, and/or other factors.

Such performance-based differentiation may be reflected, in part, in salary merit increase, and, in part, in year-end bonuses.

In order to combine several sources of revenue and reward criteria in one system of performance-based distributions, a practice would pool its disposable revenues from all sources (i.e., capitation, SCI-based revenue, receipts from cross-cutting savings, fee-for-service revenues). Such a pool of funds, available for compensation, would be divided into several compensation pools in a predetermined proportion. Each pool would be distributed according to a certain criterion. For example, Pool A would account for 30 percent of the practice's disposable revenue, i.e., net revenue available for worker compensation, and would be distributed evenly across all the practice partners. Pool B would account for 50 percent and would be distributed proportionately to individual values of the SCI. Pool C would account for the remaining 20 percent and would be distributed to reflect survey-based measurements of patient satisfaction, patient disenrollment, and physician-specific cost patterns.

3. Health Care Networks as the Locus of Ambulatory Payment Reforms

This chapter puts Peru-specific name tags on the generic terms of "PHC Provider/GP" and "Secondary (Specialty) Care Provider", widely used in the report's previous chapters. The following discussion will help land the previously proposed ambulatory financing methods on the institutional terrain of the Peruvian health care sector. Specifically, this chapter introduces the concepts, definitions, and organizational models of the Health Care Network.

3.1 Concept, Definition, and Key Features of the Health Care Network

Over the past several years, the goals of determining and testing the HCN organizational models held the spotlight on the agendas of the national health policy agencies and international health projects alike. MINSA sponsored a commission that, in addition to the ministry's key directorates, represented the Basic Health for All Program, Basic Health and Nutrition Project (PSNB – *Proyecto de Salud y Nutrición Básica*), Program of Health Care Strengthening, and Project 2000. The commission proposed a basic definition of the HCN and elaborated on the HCN's functional, structural, and geographic models and parameters. Management contracts that some Regional Health Boards signed with local HCNs shed more light on the expectations of regulators and policymakers regarding HCNs' objectives, resources, and performance. This section draws on several sources of information to determine the nature of HCNs as the backbone of the Peruvian system of health care delivery. Importantly, none of the HCN concepts, definitions, and operational models is definitive or officially approved.

This section reviews HCN models that the API design strategy seeks to strengthen with the previously proposed new methods of ambulatory financing.

According to a MINSA working definition,

> *The HCN is a group of public or private health service providers that vary by level of complexity, clinical problem-solving capabilities, and cost of operations. The HCN comprises health posts, health centers, and hospitals with up to 50 beds. The participating providers are inter-linked by a road network and social corridors [the latter formed by areas with shared transportation infrastructure, as well as socioeconomic and micro-epidemiological environments and, hence, homogeneous health needs – A.T.]. The functional and administrative articulation of the HCN ensures the provision of services covered by the Guaranteed Healthcare Plan to individuals, families and communities within the boundaries of a specific jurisdiction*[14].

[14] Slightly rephrased from MINSA-PSNB, "Delimitación y conformación de redes de servicios de salud". Documento de Trabajo, Lima, 1999: 4.

The following account of the HCN key features stems from the above-quoted key definition and other documents that dwell on the subject of HCN design. The raison d'être for HCN is in the need for organizational and operational ties among health care providers. Provider alliance by progressive clinical and organizational strategies can contribute to the following areas of health policy and care provision:

Coordination and continuity of care: HCNs provide a favorable set-up for provider coordination with clear benefits for the continuity of care. Non-overlapping geographic and functional designs, and willingness of HCN partners to coordinate their missions and operational targets with those of the network, are important prerequisites for an unimpeded coordination of services.

Provision of care in a population-centered environment: "The conceptual point of departure in developing HCN strategies is the population with its health needs and demand for health care services, socioeconomic and cultural backgrounds, prospects for development, and foreseeable changes in the future"[15]. Common health risks, disease trends, and personal/family behaviors, as well as even spatial access to care, are key determinants of a cohesive service area for an HCN. A patient-centered approach also implies plugging the HCN activities into the community agenda. It also allows for periodic evaluation of the health status of the population within the HCN catchment area.

Patient-oriented care: Modern practice of medicine relies on the patient's psychoemotional and intellectual resources in preventing, identifying, and treating the disease. Standing provider/patient relationships are of paramount importance for building trust, common experience, and alliance between both parties in managing the individual, family, and community health. Under favorable circumstances, the patient and his/her family would prefer to enroll for comprehensive care in a well-appointed HCN rather than a freestanding provider. The HCN will have to demonstrate its advantages over stand-alone providers by applying its potentially superior resources to a customer-friendly provision of care with adequate orientation on long-term health goals. HCNs ought to achieve and maintain a subtle balance between being too lax and too restrictive in controlling the enrollee in his/her care-seeking behavior.

Decentralization of the health care sector: Public contracting of care that would involve DISAs, and, plausibly, CLAS and *EsSalud* as the purchasing authorities and HCNs as integrated providers of services could ensure the dependable functioning of decentralized health care systems. HCNs epitomize a healthy element of centralization in a decentralized health care sector. By means of centralizing provider responsibility at the HCN level, the government preserves public leverage in steering the provision of services towards the basic policy goals of equity, quality, efficiency, and sustainability. At the same time, the government engages a self-regulatory potential of the provider community in pursuit of the same goals. Advancing provider autonomy from HCN to the facility level could result in excessively fragmented relationships among the regulators, purchasers, and providers of care and lead to the erosion of public guidance and control.

Better utilization of resources: The HCN structure lends itself to increased capacity utilization, higher labor productivity, lowered administrative overheads, and cost minimizing procurement of resources. Revealing the efficiency potential of HCNs will require high levels of provider integration within a network and firm management strategies aimed to unfold the economies of scope and scale

[15] MINSA/PSNB, *Delimitación de redes de establecimientos y servicios de salud. Resumen ejecutivo*., Lima, Perú, Julio 1999: 1.

embedded in the HCN design. The HCN administration and participants will enjoy broader management autonomy that would empower them for making the best use of the available resources.

Accountability of providers to the community: Controlling HCNs would be easier for communities than controlling dozens of stand-alone providers. A hypothetical HCN governing board could provide a viable organizational format for community involvement. Choosing from the existing media, CLAS ought to be viewed as a readily available tool for stepping up the community engagement in the local health care agendas. An estimated 855 CLAS embody the "government-population arrangement for a shared management of primary health care, provided by health posts and centers"[16]. It will not be too hard to refocus the CLAS Executive Councils (*Consejos Directivos*) from dealing with many autonomous PHC providers to establishing steady collaborative relationships with HCNs.

The following is a descriptive definition that attempts to integrate the above-discussed essential features of HCNs and expand the HCN concept to the contextual framework of API:

> *The HCN is an arrangement that commits health care providers to coordinating their clinical, management, and financial resources in order to serve their shared member population in an equitable, effective, and efficient way. The HCN provides a broad range of care by using its own clinical base and referring patients to external providers when deemed clinically appropriate. A variable combination of prospective, charge-based, and performance-related methods of financing defines the HCN revenue and budget. The financial results of HCN participating providers depend on their contributions to the attainment of HCN performance targets and the network's overall success. The HCN manages its participating providers by means of clinical guidelines, utilization and referral standards, internal reimbursement rates, and other methods that ensure quality while controlling costs of services. The HCN is a self-governed entity with a variable degree of association among its participants, i.e., from a minimal coordination to integrated ownership. The HCN is accountable to the community and is bound by a purchaser/provider contract, membership agreement with its enrollees, and internal bylaws. Participating providers determine the geographic parameters, capacity, and organizational structure of their network within the established regulatory boundaries and in ways that are beneficial for population's equitable access to the publicly guaranteed package of health services. The government designates a public regulatory and/or purchasing authority to monitor the HCN for compliance with the basic health policy principles and quality standards, upon which the HCN is chartered to operate.*

API will use the above-formulated definition of the HCN as a contextual framework for the pilot testing of the proposed financing methods. This working definition seeks to provide a multi-dimensional and inclusive view of the HCN. By avoiding too much specificity, it intends to accommodate a wide range of HCN designs, until findings from the API pilot implementation inform designers of the most viable strategies and solutions.

The site-specific evidence is likely to confirm the importance of a pluralistic approach to the HCN design and the need for flexible customization of a basic conceptual scheme to widely varying geographic and socioeconomic conditions of Peru.

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[16] Bermejo, Rogelio. Descentralización en salud. *Revista de la Academia Peruana de Salud*. 5/2000: 30.

The main direction of furthering HCN design would be towards internationally tested models of a vertically integrated health care system. The next section will present and ponder over several options for the organizational and legal designs of the Prospectively Budgeted (Healthcare) System (PBS).

3.2 HCN Parameters and Organizational Structure: A Peruvian Perspective

Up to 6,000 health posts, centers, and community hospitals in MINSA's jurisdiction are up for integration in publicly financed HCNs. Regional and national clinics will operate outside HCNs and provide patient care to patients referred, largely, by HCNs.

The Peruvian health system designers consider the member populations of 100,000 to 250,000 persons in the rural areas and 250,000 to 350,000 persons in the urban areas as the optimal patient bases for HCNs. Reducing membership below the indicated lower thresholds will result in excessive administrative overheads. Increasing membership beyond the upper limits will jeopardize access to, and effectiveness of, services.[17] The recommended 100,000 low-income members would justify the creation of a publicly funded HCN.

The geographic layout of HCNs ought not necessarily to follow the administrative map of Peru. Delimitation of HCNs should take into account spatial access patterns dictated by road network and river arteries, rather than the demarcation of the national territory by districts, provinces, *departamentos*, and (sub)regions. An HCN that cuts across several administrative entities will, nevertheless, deal with one DISA, if DISAs are to become 'integrated' public purchasers of HCN services in their respective territories. This would be a regional health board in whose jurisdiction most of the HCN´s patient base lies. The 'principal' DISA will bill other DISAs for their 'cross-boundary' patients and will reimburse the local HCNs accordingly.

The HCN clinical capacity should be sufficient for covering a wide variety of primary and secondary care, including medium-complexity emergency and inpatient services. HCNs are expected to have referral links with providers of tertiary care, i.e., regional hospitals. The following range of health care institutions enables the continuity of medical services in Peru[18]:

Health Posts of type II (PS.II – *Puestos de Salud, II*): PS.II are located predominantly in rural areas and, unlike PS.I, have neither physicians nor health professionals on their staff. A 'health technician', i.e., a community care giver, provides basic primary services, including material collection for lab tests, elementary first aid in emergency conditions, house calls, and access to several essential drugs. In rural areas, a PS.II serves an area of up to 5 km in radius and/or 2 hours in access time, with the resident population of 500 to 2,000 persons. In (sub)urban localities, the parameters of the catchment area are the following: radius of up to 1 km, commute time of up to 15 minutes, and population size of 1,000 to 5,000 residents.

Health Posts of type I (PS.I – *Puestos de Salud, I*): PS.I are predominantly urban providers of PHC that include the following services by a family doctor or a nurse: office visits, collection of material for lab tests, house calls, care in low-complexity emergency conditions, and access to

[17] MINSA/PSNB *Delimitación de redes de establecimientos y servicios de salud. Resumen ejecutivo*. Lima, Perú, Julio 1999: 5.

[18] The specifications of the health care providers in Peru are summarized from the following publication by the MINSA/World Bank Basic Health and Nutrition Project: MINSA/PSNB, *Delimitación y conformación de redes de servicios de salud. Documento de trabajo*. Lima, 1999: 12-14.

essential drugs. In the rural areas, PS.I admit patients for simple conditions and prior to referral for higher-level care. The urban/rural catchment areas have the following parameters: a radius of up to 2/8 km, access time not to exceed 20 minutes/3 hours, and population of 2,000 to 10,000/1,000 to 5,000 residents.

Health Centers of type II (CS.II – *Centros de Salud, II*): CS.II are urban ambulatory health centers without inpatient care capacity. They provide comprehensive PHC that includes family physician, nurse, and obstetrician services, in-house laboratory, care in medium-complexity emergency conditions, outreach care, and pharmacy. The catchment area characteristics are as follows: a radius of up to 15 km, commute time of up to 1 hour, and population of 10,000 to 60,000 residents.

Health Centers of type I (CS.I – *Centros de Salud, I*): CS.I are rural ambulatory health centers with the capacity to admit patients. They provide comprehensive PHC that includes family physician, nurse, and obstetrician services, in-house laboratory, care in medium-complexity emergency conditions, child delivery/neonatal, medical inpatient, and outreach care, as well as pharmacy. The characteristics of the catchment area are as follows: a radius of up to 20 km, access time of up to 1 hour, and population of 10,000 to 30,000 persons.

Referral Health Centers (CSR – *Centros de Salud de Referencia*): CSRs are urban/rural providers of comprehensive primary and secondary services that include outpatient consultations by an internist, pediatrician, gynecologist/obstetrician, and surgeon; medium-complexity emergency care, child delivery, neonatal care in the specialized department, operating room (optional, based on the requirement to have operating rooms within two hours of access by ground transportation), medical and surgical inpatient care, outreach care, laboratory facility for clinical, biochemical, and bacteriological tests, and pharmacy. The following parameters characterize CSR catchment areas in, respectively, urban and rural areas: a radius of up to 15 and 200 km, access time up to 1 and 4 hours, population served of 60 to 350 and 50 to 200 thousand persons.

Local Hospitals: Perform the same functions as CSR and, in addition, cover care in high-complexity emergency conditions.

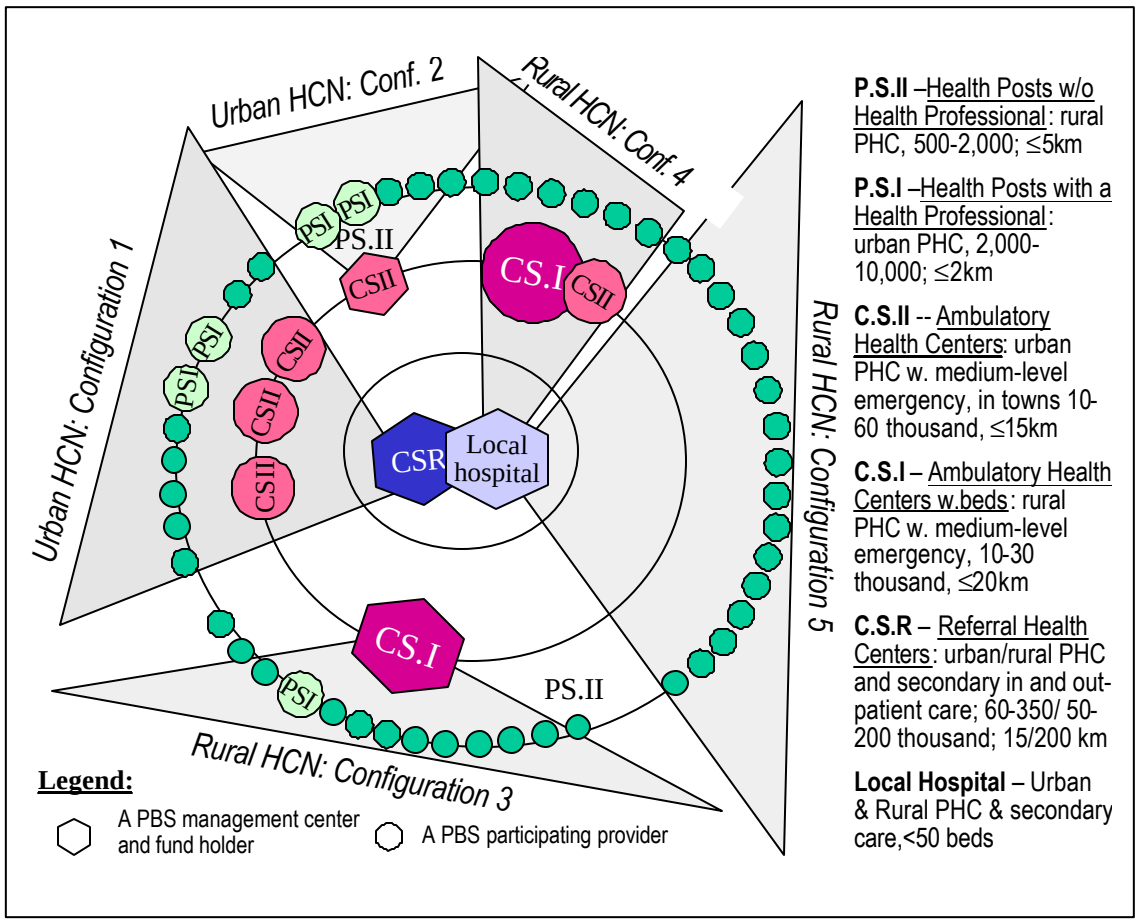
Importantly, providers in all of the above-listed categories deliver PHC and serve to all or part of their patients as the point of entry in the health care system.

The MINSA/PSNB experts recommend the following referral path to comprehensive patient care:

- In urban areas: PS.I → CS.II → CSR/Local hospital;
- In rural areas: PS.II/PS.I → CS.I → CSR/Local hospital.

In conformity with these sequences, Figure 6 presents five provider configurations for HCNs in Peru.

Figure 6. Health Care Network Configurations in Peru



The graphical layout of HCN models expands on the case of HCN "Morropón-Chulucanas" in Piura. In 1998, this network comprised 45 PS.II, 5 PS.I, 5 CS.II, 2 CS.I and 1 Local Hospital[19]. Figure 6 features a hypothetical CSR in addition to the Local Hospital. With this assortment of provider facilities at hand, we can present a comprehensive set of HCN organizational designs.

The basic HCN configuration that Figure 6 does not depict explicitly is the HCN in its current official definition, whereby all HCN providers form one network. In the studied case of HCN "Morropón Chulucanas", the network's patient population was 187,390 persons in 1999. Of that number, an estimated 25-30 percent was a double enrollment/referral count of patients who, first, had registered with the HCN (*población adscrita*) and then were counted by intra-network referral providers at the point of receiving secondary care.

From the standpoint of the patient population size, a holistic HCN design, i.e., HCN in its official definition appears to be viable. The primary enrollment of 130,000-140,000 persons ensures a stable enrollment pool, substantial economies of scale and scope in clinical and resource management, yet is not excessively high.

[19] Juan Pichihua Serna. *Estimación de costos y ajustes de los paquetes según ámbitos geopoblacionales específicos. Informe final de consultoría*. Diciembre 1998: 145.

Given a remarkably high diversity of geographic and socioeconomic conditions in Peru, the HCN in point, as well as almost any other presently defined HCN, can be broken down into more uniform components, i.e., HCN "segments" and "micro-networks". Geographic accessibility is the dominant principle of separating an HCN into segments. A segment usually comprises the population of 20,000 to 50,000 persons that gravitates towards a certain administrative center, serving the segment's geographic mid-point. The socioeconomic homogeneity (i.e., approximated by income status) is the main formative criterion for micro-networks. The recommended population minimum per micro-network is 10,000 persons[20].

A two-tier subdivision of HCNs will unnecessarily complicate further discussion. It will suffice to distinguish micro-networks within an officially defined HCN as viable entities for management and financing. Hereinafter, the report adopts the following terminological convention: micro-networks, some of which match the definition of the network segment, will be called prospectively budgeted systems and become the object of the proposed organizational and financial design.

Each design modality, subsequently called 'configuration', will describe the PBS organizational layout from three standpoints: (1) participating providers; (2) administrative and fundholding center; (3) relationships with the host HCN. The following paragraphs explain the PBS configurations from Figure 6:

Configuration 1:

- In urban settings, a relatively well-developed network of providers enables the following three-step referral path: (1) patients see their primary care practitioner in a PS.1 or PS.II, (2) are referred to a CS.II for extended PHC, i.e., for pregnancy complications, relatively severe emergency conditions, more complex tests; and (3) from CS.II to CSR for sophisticated diagnostics, childbirth, specialized neonatal care, operating room procedures, and other inpatient services.

- The CSR, i.e., an ambulatory health center with capabilities for the provision of inpatient services, is the care coordination, fundholding, and budget allocation center for the PBS.

- The CSR performs important contractual, administrative, and logistical functions on behalf of the participating providers, i.e., signs service contracts with the principal purchasers of care, coordinates enrollment campaigns, markets PBS services, procures drugs and supplies, sets out standards and controls quality of care, audits provider operations.

- The CSR receives prospectively capitated budgets from the public purchasers of care and distributes funds among general practices. The CSR also forms a 'cross-cutting financing' pool and allocates it to participating providers on the basis of incurred costs and system-wide annual savings from the improved management of care in a designated clinical condition. The CSR receives bills from GPs for the services that a purchaser of care agreed to reimburse under fee-for-service. The CSR reviews and aggregates GP bills into a consolidated monthly bill and submits the latter to the payer. The CSR also distributes SCI-based bonuses to GPs from a variable part of the capitated budget.

- In densely populated urban communities, each PS.I forms its own enrollment and becomes

[20] *Delimitación de redes de establecimientos y servicios de salud. Resumen ejecutivo*. MINSA/PSNB, Lima Perú, Julio 1999: 8-9.

a GP. A PS.I must have adequate management capacity and enrollment at the tentative minimum of 5,000 persons in order to qualify for a GP.

- All PS.II, as well as PS.I that do not match the GP requirements (i.e., due to insufficient patient population and/or lack of practice management experience), are clustered in a multi-specialty practice, headed by a CS.II. Such multi-specialty practice attains the status, equivalent to that of GP, insofar as both qualify for PBS.

- GPs draw their revenues from the CSR in the form of fixed prospective capitation, fee-for-service, and year-end distributions from the 'cross-cutting financing' and SCI bonus pools.

- The capitation rate and, consequently, the PBS fixed capitated budget encompass all levels of care. The CSR will distribute the aforementioned budget among levels of service and participating providers.

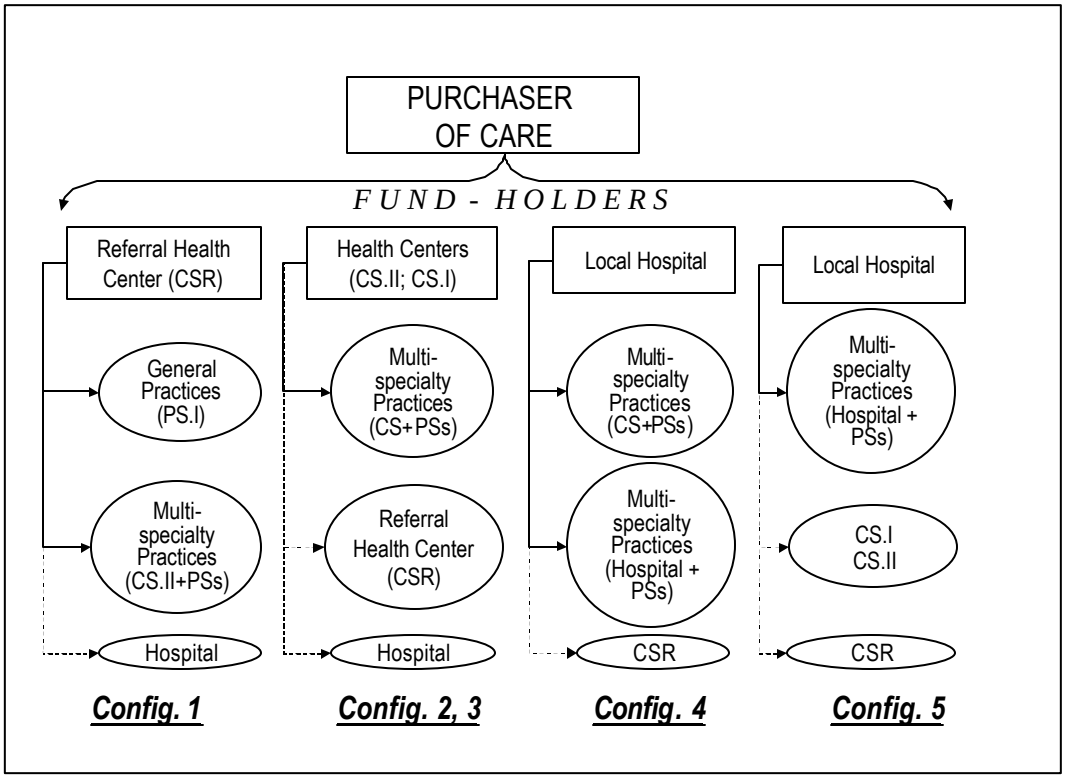
- At the beginning of the resource allocation process, the PBS capitated budgets will be determined according to the range, annual per capita cost, and utilization rates of services, as well as enrollment size of each PBS. With all the four variables set on historical values, the resulting capitated budgets will match the baseline levels of per capita spending on the ambulatory care. The GP capitation rates are expected to increase in line with expanded basic PHC package, growing scope of GP clinical responsibilities and workload, improved access to modern technology and effective drugs. Open enrollment would redistribute the PBS capitated budgets, such that some would loose funding and, possibly, the fundholding status along with the shrinking financing, while others would gain, compared to historical levels of financing. The introduction of risk-adjustment will serve as another factor of redistribution of the capitated funding among GPs.

- The CSR will provide each CS.II with its due share of the PBS capitated budget. Initially the levels of funding will reflect the historical per capita spending on CS.II services. Soon, however, the CSR may reduce the CS.II referral rates to allow for increased clinical capacity of GPs.

- The CSR will reserve part of the PBS capitated budget for its own services. The CSR will pay local, regional, and national hospitals and other providers for medically appropriate referrals. The CSR will gear its resource allocation decisions to the interests of cost minimizing structural rationalization of the PBS as a whole, rather than to maintaining the CSR own revenues.

- The capitation and other financing rates include a mark-up factor that covers the CSR costs of PBS management and coordination.

Figure 7. Proposed Allocation of the Capitated Budgets in Alternatively Configured Health Care Networks



Configuration 2:

In a small town, a CS.II can assume the functions of a PBS center. All conditions laid out under Configuration 1 apply to the current configuration with two adjustments:

- A CS.II will substitute for CSR in all of its contractual, management, and resource allocation functions.
- The CSR is not part of the PBS. It consumes part of the PBS capitated budget. The PBS incentive for reducing referrals to the third level of care is stronger under this configuration than under the previously explained design.

Configuration 3:

It differs from the previous configuration in that CS.I replaces a CS.II as the PBS center. This scenario would be more common of rural areas where CS.I would have to cover a broad range of routine ambulatory and inpatient care.

Configuration 4:

It is akin to Configuration 1, since it provides for a three-step referral path. It is likely that in the rural areas, the local health centers (CS.I or CS.II) will be best placed to form GPs, and guide and finance the health posts. It is also likely that some of the health centers will have limited management

capacity for assuming the leadership over a PBS. In this case, a local hospital may integrate the PS and CS levels of care into a PBS under its auspices.

Configuration 5:

The local hospital integrates the rural health posts into a PBS without an intermediate level that the local health centers represented under the previous scenarios. This may be the optimal approach in vast rural areas, in which the CS are absent or are located further away from some health posts than community hospitals.

In all the five reviewed modalities, the public purchasing authority will employ, and PBS will operate under, the previously proposed mix of funding methods (see Chapter 2). Prospective capitation will be the dominant payment strategy. Variable financing for PHC and secondary ambulatory care, as well as the global hospital budgeting, based on prospectively determined caseload and case mix rates, will supplement and enhance the prospective capitation.

3.3 Design of an Integrated Health Care System

This section reviews main areas of effort to develop an integrated health care system where the integration of independent providers is deemed beneficial for health outcomes and care efficiency.

1. *Legal Development.* It consists of two phases: (1) assessing existing laws pertinent to the subject of provider integration, and (2) developing an HCN legal structure and contractual relationships consistent with regulatory requirements. Activities include legal analysis of enabling and restricting provisions currently in effect; determining the HCN legal and administrative status; designing appropriate reconciliatory adjustments to mitigate existing legal restrictions; writing HCN statutes and other bylaws, and preparing and negotiating purchaser-provider contracts and referral provider sub-contracts; developing terms and conditions of enrollment; registering the HCN.

2. *Health Service Delivery Development.* This component covers the following activities: identifying or updating priority health needs of the local community; customizing the basic benefit package according to the local health needs; stating the HCN mission in its health-related aspects; projecting the HCN membership (enrollment size); determining the HCN participating providers and the network configuration; setting out clinical and resource requirements for each participant in the HCN; projecting per capita utilization of services; develop quality assurance and utilization control programs; setting up patient and clinical reporting.

3. *Organizational and Management Development.* It includes design of the following elements of HCN operation: organizational, governance, and administrative structure; community support; mechanisms for balancing administrative robustness with the demands for change and growth; strategic plan for the HCN to replace or adjust the existing strategic plans of participating providers; requirements for management information and reporting; internal rules and procedures; administrative resource needs (human resources, space and location, data processing, record keeping systems, etc.).

4. *Financial Development.* It includes projection of costs, the minimal revenue requirement, internal reimbursement rates, and prospective capitation rates (assuming that capitation becomes the predominant method of HCN financing); development of short-term and long-

term financial plans that address the overall funding needs of HCN; preparation of the HCN consolidated and provider-specific budgets; design of accounting, billing, and collection systems; setting up procurement, and asset and inventory control mechanisms; developing rules and procedures of the budget management and financial audit.

5. *Marketing Development.* Activities are focused on analyzing the demographic, economic, and market conditions in the local area; determining the benefit package, facility location, and promotional strategy, specifically, how to organize and manage the enrollment campaign and redress consumer grievances; community and government relationships.

All listed areas of activities are closely interrelated and should be carried out in parallel. The HCN development is a politically sensitive process. Providers who are not invited to participate may arouse the community into opposition against the HCN. It is important, therefore, to gain the main constituencies on the HCN side and to ensure that the public understands the reasons for and the benefits from an HCN as a vehicle for community- and patient-centered provision of health care services. The HCN development should be a transparent and participatory process.

Peru has made significant progress in developing various components of the HCN organizational structure, financing, and operation. The progress assessment chart in Table 3, outlines areas already covered in Peru and those that are not, and to be filled in the course of future reforms.

Table 3. Progress Assessment Chart: Development of Provider Networks in the Health Care Sector of Peru

?	HCN development agenda	Tools available [with references to sample sources, listed below]	Tools available or to be developed, and/or other remarks
1. Legal Development			
1.1	Regulatory assessment	Ley General de Salud ? 26842; Resolución Ministerial ? 534-97 SA/DM que crea el Programa de Administración Compartida; Decreto Supremo ? 01-94-SA. Autoriza el funcionamiento del Programa de Administración Compartida.	
1.2	Purchaser-provider contract	Acuerdos de gestión entre el Ministerio de Salud (MINSA)*, las Direcciones regionales de salud y la Gerencia de Redes de establecimientos de salud, por ejemplo, MINSA y Piura-Morropón-Chulucanas (P-M-Ch) [3]	Expand Management Contract to the HCN financing and resource management agendas
1.3	Hospital (and/or other participating provider) contracts	N/A	Set up a regulatory framework for managing relationships between an HCN and its participating providers, in order to ensure provider adherence to HCN clinical and referral guidelines, service utilization, and cost targets
1.4	An HCN Member Agreement	N/A	A statement of rights and responsibilities of a patient as a user of HCN services, and of an HCN with respect to the patient.

2. Health Service Delivery Development			
2.1	HCN Mission Statement	El Acuerdo de Gestión por ejemplo: P-M-Ch: 'La Red se compromete a lograr el más alto desempeño posible para la operación del conjunto de servicios a fin de asegurar la continuidad en los cuidados de salud e incrementar el nivel resolutivo y satisfacción del usuario' [3:2]	May require adjustments
2.2	HCN service list	el Plan Garantizado de Servicios de Salud (PGSS) ´[6]	May be adjusted for (1) local epidemiological priorities, and (2) what is affordable under available resources
2.3	HCN participating facilities, their clinical capacity, and accessibility parameters	Methodology [1]; Analysis [2]; List of participating facilities [4]	In some cases, the proposed methods of funding will be applied to the established HCNs. In other cases, prospectively budgeted systems and general practices will be formed within HCNs, according to the previously outlined configurations (see Figures 6 and 7).
2.4	Enrollment terms and size	Definition of target populations under SIS; Local population base: Población por grupo etáreo y grupo específico s egún establecimiento; por sexo y ubicación micro-geográfica. [4]	Population served by health posts and health centers is available. By community hospitals is not. For all facilities, primary enrollment (*adscipción*) ought to be distinguished from the population served.
2.5	Per capita utilization of services	Volúmenes meta por atención de salud pública y servicio a las personas [5,6]	Can be broken down by HCN participating facility proportionately to facility-specific enrollment from 2.4. The USIS PIFA database can give a detailed account of the diagnostic and curative services provided in the in- and outpatient settings.
2.6	Quality assurance	Indicadores de resultados de producción de servicios: resultados primarios, impacto en estado de salud; métodos de verificación	The PIFA database and other SIS reporting tools contain information for quality control
2.7	Utilization control	N/A	The PIFA database: Baseline utilization rates (annual numbers of services per enrollee) will be set out as benchmarks for prospectively capitated budgeting. Variance analysis gauging deviation of the actual from the planned utilization will inform financial and clinical management
3. Organizational and Management Development			
3.1	HCN participating providers	See 2.2	
3.2	Governance structure	N/A	Proposed composition of the Board of Directors and representation in the HCN governance
3.3	HCN Strategic Plan	A pivot for the strategic plan is provided by Acuerdo de Gestión, under "Objetivos" y "Los Compromisos que asume la Red"	Strategic plan ought to support three priority objectives, i.e., (1) raise quality of services; (2) increase population coverage; (3) design and validate new models of management, service delivery, and financing
3.4	Management information and decision support systems	El SICI for cost accounting; El catálogo de servicios CPT	Design of an integrated data base, including the following modules and functions: enrollment file; service utilization by member and physician; cost accounting and budget analysis; practice and

			prescription guidelines; electronic scheduling.
3.5	Internal rules and procedures	The existing bylaws regulate staffing schedule, HR management, record keeping, etc.	Ought to be adjusted to replace the facility-specific regulations with an HCN-wide internal regulatory framework
4. Financial Development			
4.1	Budget and spending	Presupuesto consolidado por establecimiento, atención y factor productivo [5,6]	This information will be used to estimate per capita spending by HCN participating provider (a 'top-down' method of capitation rate estimation)
4.2	Unit costs: HCN-wide averages by service	Presupuesto consolidado por factor productivo según estructura funcional y subcomponente por DISA [5,6]	Unit costs per health service and activity are important for a 'bottom-up' estimation of per capita spending. Variation of provider-specific costs must factored in the calculations
4.3	Unit costs: facility-specific by service	Anexo III. Costo unitario de los servicios intermedios y finales. Anexo V. Reportes básicos del SICI sobre composición de costos, según establecimiento de salud [8,9]	SICI-based service cost estimations covered providers of all types, i.e., PS, CS and hospitals. Such estimations ought to be repeated for participating providers of a pilot HCN.
4.4	Risk adjustment	Distribución de recursos públicos para atenciones básicas de salud corregida por riesgo biológico, pobreza y ruralidad [10: Capítulo IV y Anexo]	In the context of a pilot experiment that involves few HCNs, the risk adjustment is a purely methodological issue. The formula, proposed in [10] is quite adequate. Transition to risk-adjusted levels of per capita financing would occur gradually, over a medium- to long-term perspective. A mechanism of a gradual transition from historical to risk-adjusted allocations ought to be designed as an essential tool of need-based health financing.
4.5	User fees and exemptions	A multi-variable formula of targeting	
5. Marketing Development			
5.1	Enrollment campaign	N/A	Guidelines for an open enrollment campaign
5.2	Advocacy capacity	N/A	Guidelines for government, community and public relationships, including for development of a comprehensive public awareness campaign

Sources of information used in the identification of tools available for HCN development in Peru:

1. Delimitación y Conformación de Redes de Servicios de Salud. MINSA/PSNB. Documento de trabajo, 14 pp.

2. Delimitación de redes de establecimientos y servicios de salud. Resumen ejecutivo. MINSA/PSNB, Lima-Perú, Julio de 1999.

3. Acuerdos de Gestión de Redes, 1999. MINSA/PSNB. Programa de Administración de Acuerdos de Gestión, Abril de 1999.

4. Población por Grupo etáreo y grupo específico según establecimiento; por sexo y ubicación micro-geográfica. Solamente para los P.C. y C.S. Los hospitales no se incluyeron. *Archivo spp.piur.xls. – hojas 3 y 4.*

5. Formulación presupuestal año 2000. Elaborado con el Sistema de Programación y Presupuesto Basado en Costos, SPP. Dirección de Salud de Piura, Lima, Noviembre de 1999. 1ª parte (4 pp.).

6. Formulación presupuestal año 2000. Elaborado con el Sistema de Programación y Presupuesto Basado en Costos, SPP, Dirección de Salud de Lima Norte, Lima, Noviembre de 1999.

7. Indicadores de resultados de la producción de servicios. Anexo a un Acuerdo de Gestión.

8. Análisis de la producción, costos e ingresos de los establecimientos seleccionados en la Red de Servicios de Salud Morropón – Chulucanas (PIURA). Documento Cinco-A, MINSA/PSNB, Plan de Desarrollo e Implementación del Sistema de Información de Costos e Ingresos (SICI), Lima, Febrero de 1999.

9. Análisis de la producción, costos e ingresos de los establecimientos seleccionados en la red de Servicios de Salud de Piedra Liza (Lima Norte), Documento Cinco-C.

10. Juan Pichihua Serna, M.A. (Econ.) Asignación de recursos financieros destinados del MINSA hacia regiones/subregiones de salud seleccionadas. Informe dinal de consultorias, MINSA/PSNB, Lima, Diciembre de 1998.

4. Information Requirements and Resources

The proposed methods of ambulatory financing call for an increased use of health and management information by SIS, DISAs, HCNs, and participating providers. Patient, clinical, resource, service cost, and utilization data will inform the financing, management, and evaluation of patient care, as well as service tracking, billing, and payments. This chapter briefly describes key modules of a health and management information system (HMIS) that will support the HCN development and ambulatory payment reforms. Designing and testing these components ought to be part of API.

4.1 Patient Information

An enrollment database (EDB) forms the information cornerstone of the membership and service management at the level of HCNs and participating providers. The EDB stores patient records for the passively and actively enrolled individuals, thus maintaining an inception-to-date roster of individuals who were enrolled at least once with a given HCN. The EDB is expected to contain the following sets of data fields:

Personal identification, i.e., last name, first name, date of birth, gender, a relevant ID number, or a modified set of these and other personal data, according to the standards, utilized by the social security and/or other population registries. A unique personal identification number (PIN) encodes personal information. The following users apply PIN for the following management and evaluation needs:

- A GP for registering enrollment
- SIS, DISAs, GPs, and HCNs to count enrollment and determine the prospectively capitated budgets
- HCNs, GPs, and referral providers for referral, billing, payment, and collection
- SIS, DISAs, and HCNs for clinical audit, disease monitoring, risk adjustment, utilization control, and other analytic cross-tabulations.

Place of residence, including zip code and street address.

Eligibility, i.e., passive versus active enrollment, exoneration status (i.e., in regard of user co-payments), additional sources of coverage. The latter may be relevant from the standpoint of the benefit coordination policy in the public health care sector of Peru. Specifically, SIS will withhold funding for the individuals who are covered by a separately managed off-budget source.

4.2 Epidemiological and Clinical Information

This component would include the following data and data tools:

Health status, i.e., the Functional Status Assessment, i.e., according to COOP/WONCA charts[21].

Clinical condition, i.e., symptoms and complaints according to ICPC-2 or an alternative Reason for Visit Classification[22]; and diagnoses, according to ICD-10.

Care provided, i.e., preventive, diagnostic, treatment interventions, as well as referrals and administrative procedures according to ICPC-2.

The proposed implementation of the ICPC-2 matrix of PHC clinical conditions and interventions can become the centerpiece of modernization of clinical classifications in the PHC sector of Peru[23] and an information pivot in Peru's move toward a new standard of ambulatory patient reporting.

Based on the evaluated applications of ICPC worldwide, observers came to the conclusion that "it was decided implicitly to give priority to ICPC as a diagnostic classification, although ICPC is also used as a classification for reasons for encounter and for interventions"[24]. The international community, thus, tends to view the first three criteria as independent options for clinical coding. Ideally, however, all the three ought to be used concomitantly in order to integrate and enhance patient information for clinical control, cost assessment, and resource management purposes. Following the logic of a patient visit, a practitioner would start filling out the ICPC-2 matrix by entering symptoms and complaints, then record procedures and other interventions, and, finally, a diagnosis. The diagnosis would then become the label for the PHC episode and the point of departure in planning for follow-up visits and interventions. Both at the micro-level (patient records) and at the macro-level (i.e., mapping clinical data into the ICPC-2 matrix for national PHC planning and management), the development of a patient record would adhere to the following matrix format:

(Symptoms&Complaints + Procedures + Diagnoses) x Clinical Chapters

This coding process will enable relating symptoms to diagnosis, and both of the above to clinical and public health interventions, resource intensity, and costs of PHC. ICPC-2, thus, provides a more multi-dimensional view of the ambulatory case than a procedure coding that focuses on diagnostics and treatments alone. At the same time, the ICPC-2, with 311 symptoms and complaints, 366 diagnoses, and 680 procedures on its classification lists appears to be a more viable option for rural PHC providers in Peru than more detailed service classifications that contain many thousands of

[21] See: *Description of the COOP/WONCA Charts, Officially the Dartmouth COOP Functional Health Assessment CHARTs/WONCA*. © Trustees of Dartmouth/COOP Project 1995.
[22] See for example: *The 1997 Reason for Visit Classification for Ambulatory Care (RVC)*, developed by the National Council for Health Statistics in the United States. It distinguishes among approximately 440 symptoms, prior diagnoses, routine examinations and screenings, treatments for conditions and operations, various therapies and injuries, visits by referral, and other reasons for an office-based outpatient encounter.
[23] "The seminal contributions of the International Classification of Primary Care (ICPC) provide another dimension of functionality, constituting a comprehensive classification specifically organized for primary care". – Chute CG. *Moving Toward International Standards in Primary Care Informatics*. DHHS/Agency for Health Care Research and Quality. Paper presented at the International Conference on Health Care Informatics, New Orleans, Louisiana, November 1995.
[24] *Family Practice*, Vol.17(2): 103.

procedures and, therefore, require sophisticated coding skills and data processing capabilities[25]. Cross mapping between ICPC-2 and CPT may indicate a conciliatory approach to the introduction of ICPC-2 without giving up the already adopted CPT99.

In the long term, Peru may want to consider joining 36 countries that mastered the use of the Systematized Nomenclature of Human and Veterinary Medicine (SNOMED), a compendium of more than 150,000 terms and descriptions used in health care. SNOMED is the product of the American College of Pathologists. The purpose of SNOMED is to index, store, and retrieve information about a patient in a computerized medical record. "The granular, detailed concepts codified in SNOMED can be easily combined into broader classifications used for statistical and administrative purposes. The compositional nature of SNOMED and its hierarchical systematized structure as a multiaxial controlled terminology transform the notion of a coded vocabulary into a powerful tool for outcomes analysis, cost-effectiveness studies, knowledge-based practice guidelines and support systems, comparison of health care plans, and many other applications".[26]

The original version of SNOMED dates back to 1977. The 1993 edition expanded the SNOMED terminology to 11 groups of patient data, including topography (anatomy), morphology, etiology, function, disease/diagnosis, procedures, occupations, living organisms, chemicals, physical agents, forces, and activities; social context, and general linkage modifiers. These data, if consistently coded in patient records, would enable multi-dimensional cross-tabulations that would provide an exhaustive description of a health problem, link a disease to its environmental and occupational causes, and record provided care procedure by procedure.

A comparative assessment of ICD-10, ICD-9-CM, CPT and SNOMED for the ability to capture patient and medical information showed a consistently superior performance of SNOMED. The estimated share of patient record information lost by SNOMED did not exceed 13 percent, while with other classification systems "major amounts of information go unrecognized, inevitably resulting in significant misclassification problems for analyses"[27]. The potential problem of using SNOMED is an astronomical number of entries. Given the complexity of this system, it will pay off, if only there is a clearly defined program of management applications that will involve a substantial part of the recorded data. It is unlikely that the health care management agenda in Peru will inspire the appearance of such a program in the foreseeable future.

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[25] For example, Current Procedural Terminology, adopted by the Physician College of Peru and commonly used for service coding in the United States, contains 10,500 codes, of which approximately 7,500 codes represent services included in the physician fee schedule, more than 5,000 codes describe procedures that are covered under the hospital outpatient prospective payment system, and almost 2,500 codes are included on the list of ambulatory surgical procedures. 1998 Medicare Payment Rules for Services of Physicians and Other Practitioners. *Federal Register*, October 31, 1997; Medicare Program; Update of Rate-setting Methodology, Payment Rates, Payment Policies, and the List of Covered Surgical Procedures for Ambulatory Surgical Centers, Effective October 1, 1998, DHHS/HCFA. 42 CFR Parts 416 and 488. *Federal Register*, June 12, 1998; Prospective Payment System for Hospital Outpatient Services. DHHS/HCFA, 42 CFR Part 409. *Federal Register*, September 8, 1998.

[26] Kudla K.M., Rallins, M.C. SNOMED: *A Controlled Vocabulary for Computer-based Patient Records*. The American Health Information Management Association, 1998.

[27] Campbell K.E., Campbell J.R., Chute C.G., Cohn S.P., and Oliver D.E. The Content Coverage of Clinical Classifications. *Journal of the American Medical Informatics Association*, 1996, May/June: 224-233.

4.3 Resource Information

This data component includes the following types of information:

List of essential drugs

According to the WHO definition, "essential drugs are those drugs that satisfy the health care needs of the majority of the population; they should therefore be available at all times in adequate amounts and in the appropriate dosage forms, and at a price that individuals and the community can afford."[28] According to the Integrated Health Insurance Administration (USIS – *La Unidad de Seguro Integral de Salud*), Peru has already developed a recommended national list of essential drugs. The WHO's Action Programme on Essential Drugs would be the most appropriate reviewer for this list, as well as the source of guidance on the rational procurement and use of respective pharmaceuticals. If the national list is found incomplete, the 311 items on the WHO Essential Drug List, 11th Edition (1999), can be used as a reputable guide for Peru[29].

In order to procure, manage, and utilize pharmaceuticals in an effective and efficient manner, health regulatory authorities, procurement agencies, and providers of care would need to work with generic drug names. The WHO list of International Nonproprietary Names contains approximately 7,000 generic titles and can be recommended as a standard drug classification and coding system for the national use in Peru.

Drug inventory and flow database

HCNs and participating providers ought to equip themselves with a pharmacy database that would enable inventory and flow control of essential drugs, weighted average pricing of a unit of any one drug by date of consumption, and timely reordering in order to prevent stockouts.

Weekly time sheets

Since part of the labor cost of patient care will be reimbursed by work hour, health care providers ought to introduce a uniform format of the weekly time sheet, as well as a format for cumulative year-to-date time accounting.

4.4 Cost Information

The SICI generates the following information about facility-specific costs that will feed in the service costing process under API:

- List of ambulatory cost centers, including, GPs, specialist offices, diagnostic and rehabilitation care units, logistical support and administrative departments;
- Distribution of direct costs by cost center, including wages and salaries, payroll taxes, drugs and supplies, depreciation of equipment;

[28] Department of Essential Drugs and Medicines Policy (EDM). WHO, Geneva.
[29] EDL-11, Revised in December 1999. *WHO Drug Information*, Vol.13(4), 1999.

- Provider annual totals by indirect cost, including utilities, building maintenance, office supplies, communications, transportation, security, cleaning, business travel, and other;
- Distribution of provider resources by cost center, including floor space, staff, equipment at book and/or replacement value;
- Allocation of indirect costs by cost center, using physical plant, human resources, and direct costs as cost drivers;
- Full costs by cost center as the sum of direct and indirect costs;
- Sample-based count of specialty physician, diagnostic, and rehabilitative services by referring cost center;
- Step-down allocation of the full costs of intermediary cost centers to the full costs of revenue-earning cost centers.

The above-described information will lead to the calculation of *final costs* of GPs and other HCN participating providers. Intermediate and final results of this process will help develop prospective capitation rates, fee schedules for services, and administrative overhead rates.

In the long run, all types of information presented in this chapter will merge in an integrated HMIS that will serve as an effective tool for controlling the demographic, epidemiological, utilization, and payment profiles of patient care in an HCN.

In Lieu of Conclusion: From the Conceptual to Technical Design

After review, discussion, and approval of the conceptual design presented here, the next stage of API needs to focus on the development of tools for quantifying and piloting the proposed methods of ambulatory financing. The provider financing practices, and cost and utilization data of SIS will inform API technical designs. The API technical team will collaborate with the USIS experts on the following activities:

1. Reclassify the ambulatory services under the SIS predecessor programs of Maternal and Child Insurance (SMI – El Seguro Materno Infantil) and Free School Insurance (SEG – El Seguro Escolar Gratuito) into CPT-coded procedures, i.e., according to the experimental standard, adopted by the Physician College of Peru. With this objective in mind:

    1.1 Evaluate SMI and SEG reports to identify care-giving settings for relevant services and, based on that information, identify the predominantly ambulatory services from the SMI and SEG benefit plan.

    1.2 Detail ambulatory services from the highly aggregated list of SMI benefits (see for example: "SMI: Tarifario Vigente a Partir de 16 de Enero del 2001") to the level of procedures. An important source of information for a cross-walk from SMI services to procedures is "Análisis comparativo de costos observados y costos estándares de los servicios de salud que cubre el Seguro Materno Infantil". A MINSA/PSNB Report. Lima, December 2000.

    1.3 Use a CPT99 search utility to transform SMI procedures into CPT99 titles and codes.

    1.4 In collaboration with SEG experts, convert the already detailed catalog of approximately 1,600 services on the SEG benefit list into CPT titles and codes.

The above-outlined activities will focus on high-volume services. The intermediate target is to convert into CPT titles and codes up to 80 percent of the total number of units of services that SMI and SEG reported for 2000.

2. Further activities will require the selection of pilot providers that would match the following three broadly defined conditions:

    - Account for a substantial volume of diverse ambulatory services, provided in the framework of SMI and SEG;
    - Represent different levels of ambulatory care, participate in the same HCN, and gravitate toward the same PBS, if such is created within the network.
    - Possess at least minimal experience with modern methods of service, patient and cost accounting, data processing, and provider payment innovation. Prior use of, or

familiarity with, ICD-10, *Forma Automatizada de Epicrisis*, the SICI cost-accounting system will indicate the presence of the required experience.

3. Based on the newly elaborated and coded list of procedures, the API team will estimate direct and full costs of the SMI and SEG services.

   3.1 Direct costing will include itemized assessments of direct labor, pharmaceuticals and health supplies, and, selectively, medical equipment costs, associated with each CPT item. SMI previous estimations and SEG billing documentation will help ascertain direct service costs. Clinicians, resource managers, and accountants from the pilot facilities will help with this activity and validate the preliminary findings.

   3.2 Indirect costing will involve the use of SICI. According to item 2, the selected pilots will have prior experience with SICI. Even if SICI is already in place, the API experts will have to evaluate the accuracy of the output information and modify the dataset toward the costing of ambulatory care. Indirect costs will be assigned to direct costs according to a flat, prorated, or an alternatively defined approach.

4. Procedures, detailed to the CPT code level (item 1) will be grouped to sets of procedures, each set involved in treating and controlling relevant clinical conditions, or delivering disease prevention and health promotion interventions. The API epidemiologist will study SMI resource standards and SEG clinical protocols to reveal disease-specific sets of procedures. API will not entail the packaging of the entire mix of ambulatory services. Instead, it will demonstrate a methodology for future implementation. The goal for the API technical design is to compile a sample of condition-specific sets of services that captures the most common conditions in a variety of clinical specialties. A tentative target number of service sets is 25. In this exercise, API will rely on the clinical guideline, adopted in the health care sector of Peru.

5. The API team will estimate costs of condition-specific procedure sets per medical encounter, case of disease per year, and enrollee per year. The resulting annualized costs would serve as disease- or intervention-specific components of a prospective capitation rate. This bottom-up, 'compartmentalized' approach to the design of capitation rates will integrate procedure costs, clinical strategies, and disease trends. In the future, it will allow to control and gradually expand the scope of capitation, in line with the growing clinical skills and worker motivation of health care providers. For example, the capitation rate would be accurately adjusted upward to include a new clinical condition after primary care doctors were properly trained to prevent, treat, and control it.

6. By the end of the API design stage, the technical team will process the resulting data into a series of ambulatory payment tools, including a relative value scale by itemized procedure and select groups of procedures, and provider-specific service and capitation rates.

7. The project team will document results of the above-described activities and present them in methodological guidelines to the health policy and financing institutions of Peru.